HMI
User Manual

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ONLINE HELP FILES

The help files included as part of the software installation will always contain the most complete and up to date information about the software.

This manual was intended to provide an overview of the software as well as provide useful information prior to installation of the software.

MANUAL LAYOUT

This user manual starts with configuration and general follows, starting with the first menu item and proceeding. Use the table of contents to access that part of the manual you are interested in reading.

See the “Sections” area for more layout information.

DEFINITIONS

Point: A point is a data object that contains many attributes to provide access to the program. For example, a pressure switch or a pressure transmitter would be a point.

Tagname: In the HMI a tagname is the attribute used to distinguish one point from another point. Each tagname must be unique. Point and tagname are used interchangeable.

Port: Access to external devices for data collection, to connect to points, is normally via a serial connection or Ethernet, using a communication protocol. In some cases, for example ODBC (Open Database Connectivity), the connection is software only. “Port” is used to refer to one of these connection types.

Graphic element: An icon/image/representation/table/glyph the user places in a graphic window.

Graphic: A user created window that contains graphic elements.

Contact support if you have any questions or need help.

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OVERVIEW

The HMI is divided into two main parts. The first part is named “configuration” and the second part is named “runtime”.

When the HMI is first started it begins operation in configuration mode. The user can stay in configuration mode, select to begin runtime mode or via a setting, the runtime mode will automatically launch.

Configuration mode is used to create graphics, configure communication drivers, set up alarms, create data points to monitor, etc.

Runtime mode is used to communicate with the external devices and “monitor” the devices per the “configuration”, display graphics, log values, etc.

The configuration settings are maintained via “projects”. The number of projects is unlimited. Only one project can be active at a time. Each project is a directory and all the files in the directory comprise the project. The project name is the same as the directory name that contains all the project configuration files.

The HMI is very easy to use and is designed to not require any scripting or extensive programming experience before the user can create a project.

The design of the program is compartmented. For example, if the project does not need the HTTP web server features, those parts of the HMI, help files and this manual that cover the HTTP web server can be skipped over.

SECTIONS

This user manual is divided into several sections.

Projects, covers what comprises a project and how to create and save projects.

Configuration, covers all areas of the HMI that are not covered by other sections of the manual.

Points, covers point types, configuration, copying, deleting, exporting, importing, etc.

Graphics, covers the graphic editor.

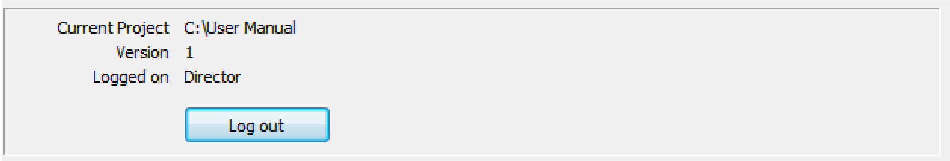
Scripting, covers the scripting editor, script commands/functions, etc.

Communication, covers all the protocols the HMI supports.

Runtime, covers runtime windows and operations.

PROJECTS

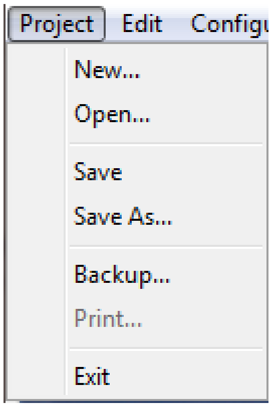
A project is a collection of files that fully defines the operations of the program during runtime or monitoring mode.



Current Project C:\User Manual
Version 1
Logged on Director

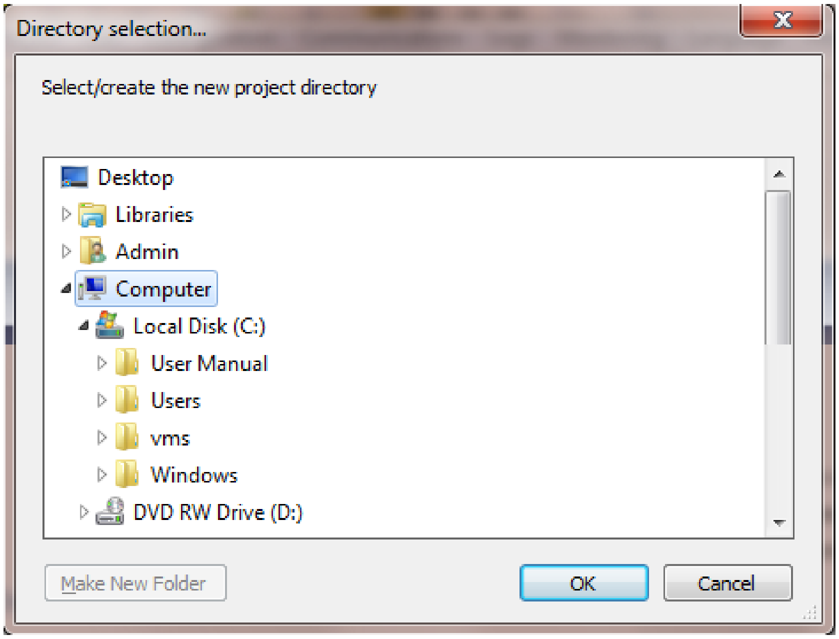
The current project is listed on the main window.

PROJECT MENU


Project
Edit
Configu
New...
Open...
Save
Save As...
Backup...
Print...
Exit

NEW

This menu is used to create a new project. A directory dialog will be displayed.



Directory selection...

Select/create the new project directory

Desktop
Libraries
Admin
Computer
Local Disk (C:)
User Manual
Users
vms
Windows
DVD RW Drive (D:)
Make New Folder
OK
Cancel

Select a directory to store the project files or create a new directory. It is recommended to save/store each project in a separate directory. Mixing project directories will cause confusion and possible loss of data.

OPEN

This menu is used to open an existing project. The same directory dialog as the “New” menu item will be displayed.

SAVE

The “Save” menu item will be enabled when a change to the project has been made and the change has not been saved. Selecting the menu item will save the change and the menu item will become disabled.

SAVE AS

The “Save as” menu item will save the current project to the selected directory and make the directory the current project. The same directory dialog as the “New” menu item will be displayed.

BACKUP

The “Backup” menu item presents the standard file save dialog and prompts with the name of the project as the filename and “zip” as the extension. The backup menu item creates a compressed zip file of the current project and saves the file to the name supplied. The project is not modified.

EXIT

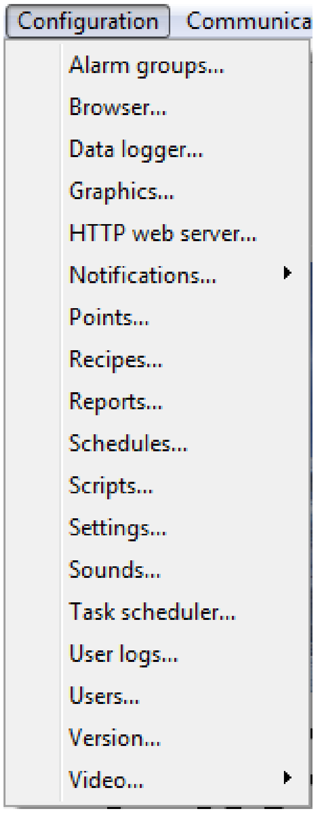
The “Exit” menu item ends the configuration program.

CONFIGURATION

The configuration section comprises all settings that are not part of a communication driver, points, scripting or graphics.

CONFIGURATION MENU

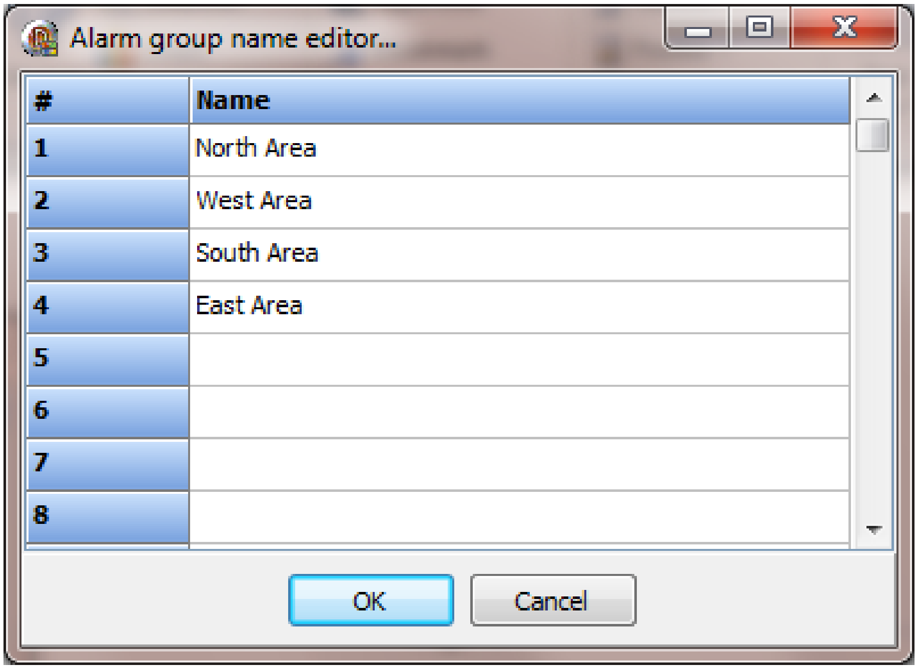
The configuration menu has many items.


Configuration
Communica
Alarm groups...
Browser...
Data logger...
Graphics...
HTTP web server...
Notifications...
Points...
Recipes...
Reports...
Schedules...
Scripts...
Settings...
Sounds...
Task scheduler...
User logs...
Users...
Version...
Video...

Some of the items are defined in this section and the remaining items are given separate sections. For example, “Graphics” has a section.

ALARM GROUPS

“Alarm groups” provide a method to partition alarm data. This could be by area, type, machinery, etc. Other elements of the program allow for displaying all groups or a selected group. For example, a graphic screen may show the status of the fire pumps. On that screen could be an “Alarm panel” and the panel only displays the alarm group for fire pumps.

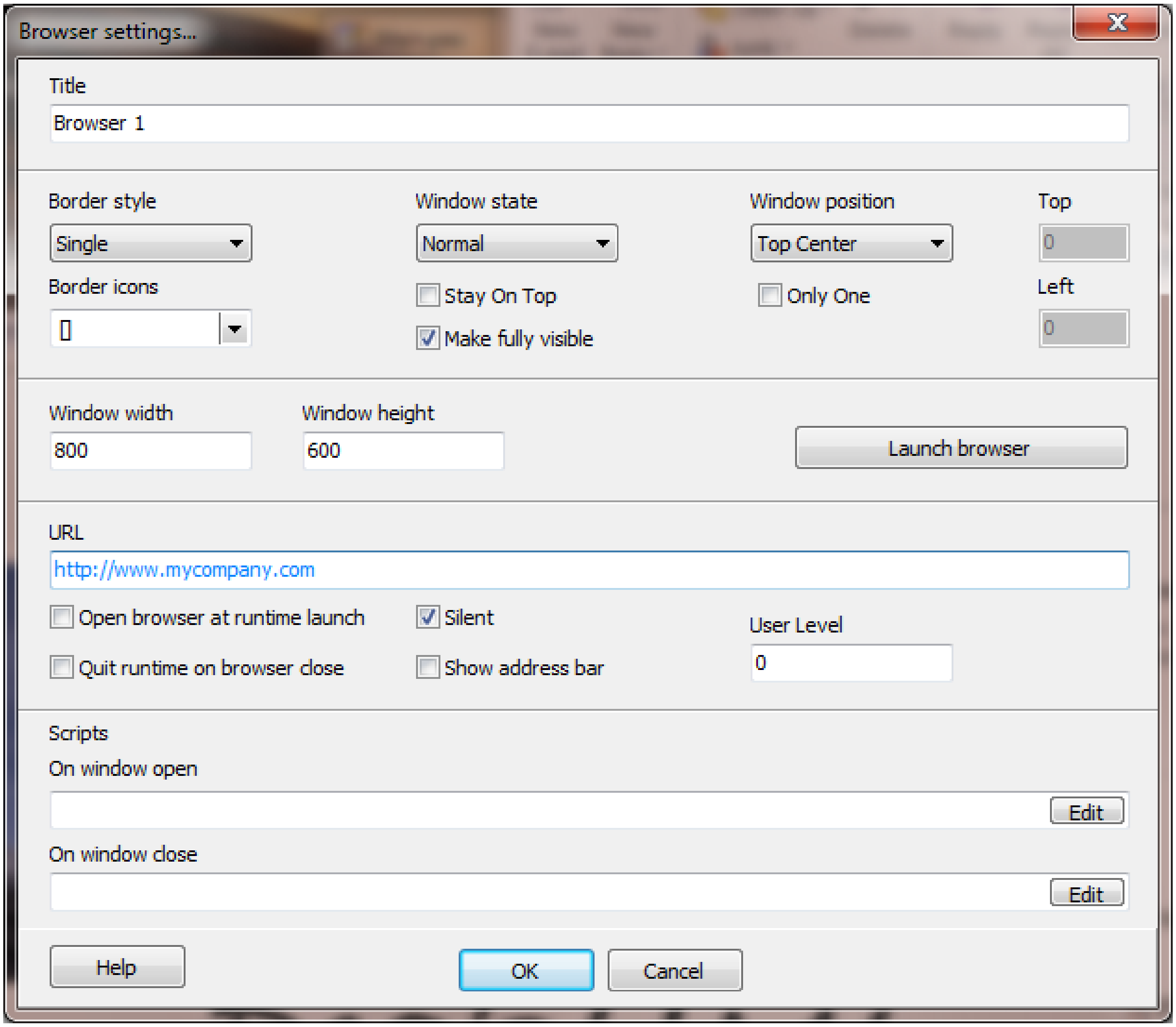


#	Name
1	North Area
2	West Area
3	South Area
4	East Area
5	
6	
7	
8	

The alarm group names are not required to be unique.

BROWSER

The HMI can display a browser window. The browser window uses Internet Explorer (IE) to render the window but it does not use an IE window.



Browser settings...

Title: Browser 1

Border style: Single

Border icons: ▯

Window state: Normal

☐ Stay On Top

☑ Make fully visible

Window position: Top Center

☐ Only One

Top: 0

Left: 0

Window width: 800

Window height: 600

Launch browser

URL: http://www.mycompany.com

☐ Open browser at runtime launch

☑ Silent

☐ Quit runtime on browser close

☐ Show address bar

User Level: 0

Scripts

On window open: Edit

On window close: Edit

Help OK Cancel

Title

This string will appear in the title bar of the window if the window is configured to show the title bar.

Border Style

Windows provides for several window border styles. None, single, sizable and dialog. These styles can be viewed by selecting the "Show Window" button in the middle of the screen.

Border Icons

These are the normal "Windows" icons in the top right corner of the window. If the "Maximum" or Minimize" is enabled the "System" must be enabled.

Stay on Top

This instructs the window to stay on top off all other windows. Having more than one window open with this attribute set will cause unpredictable window behavior.

Make fully visible

On multi-monitor systems when the window is positioned the window may span several monitors. If this attribute is enabled the form will be repositioned to fully fit on the monitor, if possible. Note: The main monitor is the target monitor for the window when this attribute is enabled.

Window Position

Select the position to open the window. As designed opens the window in the last position it was during configuration.

Only One

If this attribute is enabled the program will allow only one window with this name to be opened.

Window State

This determines how the window is to be displayed when opened. Normal is the configured size. Maximized, the window will fill the main screen. Minimized will show the window as a small bar on the bottom of the screen (as determined by Windows).

Window Width/Height

This is the "normal" size of the window, including any border and title bar. The border style and the "normal" size of the window determine the client width and height.

Show Window

View the window with the selected settings. If the window configuration does not provide a close button, use ALT+F4 to close the window.

URL

The URL to use when the browser window is open.

Quit on browser close

When the last browser window is closed runtime monitoring will stop and the application will quit.

Open browser at runtime launch

When the runtime application is started the browser window will open and navigate to the specified URL.

Silent

This setting specifies if the browser can display dialog boxes. (This does not disable all dialogs).

Show address bar

Hide or show the URL address bar.

User Level

At runtime the logged on user must have at least the level entered to view the window.

Scripts

WARNING: The scripts apply to all browser windows. The 'On Window Open' and 'On Window Close' will execute each time a browser window is opened or closed.

On Window Open

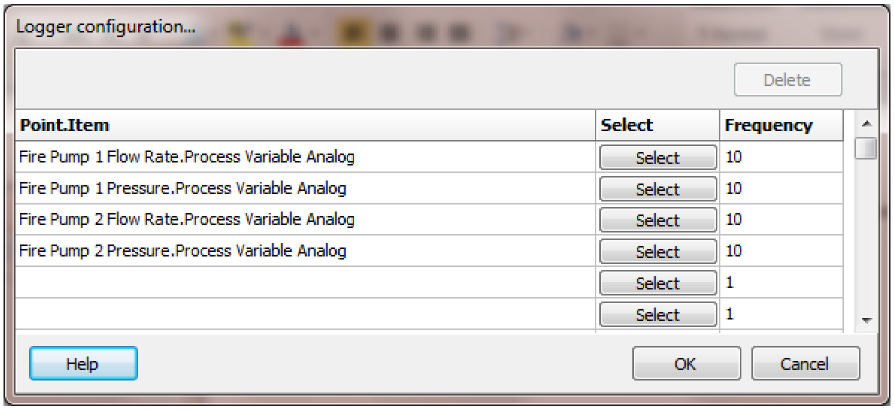
If selected, the script will run once when the window is opened. It will run each time the window is opened. The script is executed as the next to last action for opening a window. The last action is to check the user level. If the logged on user level is not equal to or greater than the user level the window is destroyed.

On Window Close

If selected, the script will run once when the window is closed. It will run each time the window is closed. Warning: The window may be closed before the script executes.

DATA LOGGER

The data logger is used to store the value of a point at a specified frequency.



Point.Item	Select	Frequency
Fire Pump 1 Flow Rate.Process Variable Analog	Select	10
Fire Pump 1 Pressure.Process Variable Analog	Select	10
Fire Pump 2 Flow Rate.Process Variable Analog	Select	10
Fire Pump 2 Pressure.Process Variable Analog	Select	10
	Select	1
	Select	1

A point and item are selected and the frequency is set. The frequency is in seconds. The frequency range is 1 - 32767 seconds.

A file is created for each point/item logged. A point/item can only be selected once.

The log file holds a maximum of one day of data values.

The log file is created at runtime start. If the log file already exists, for the day, the new data is appended to the log file.

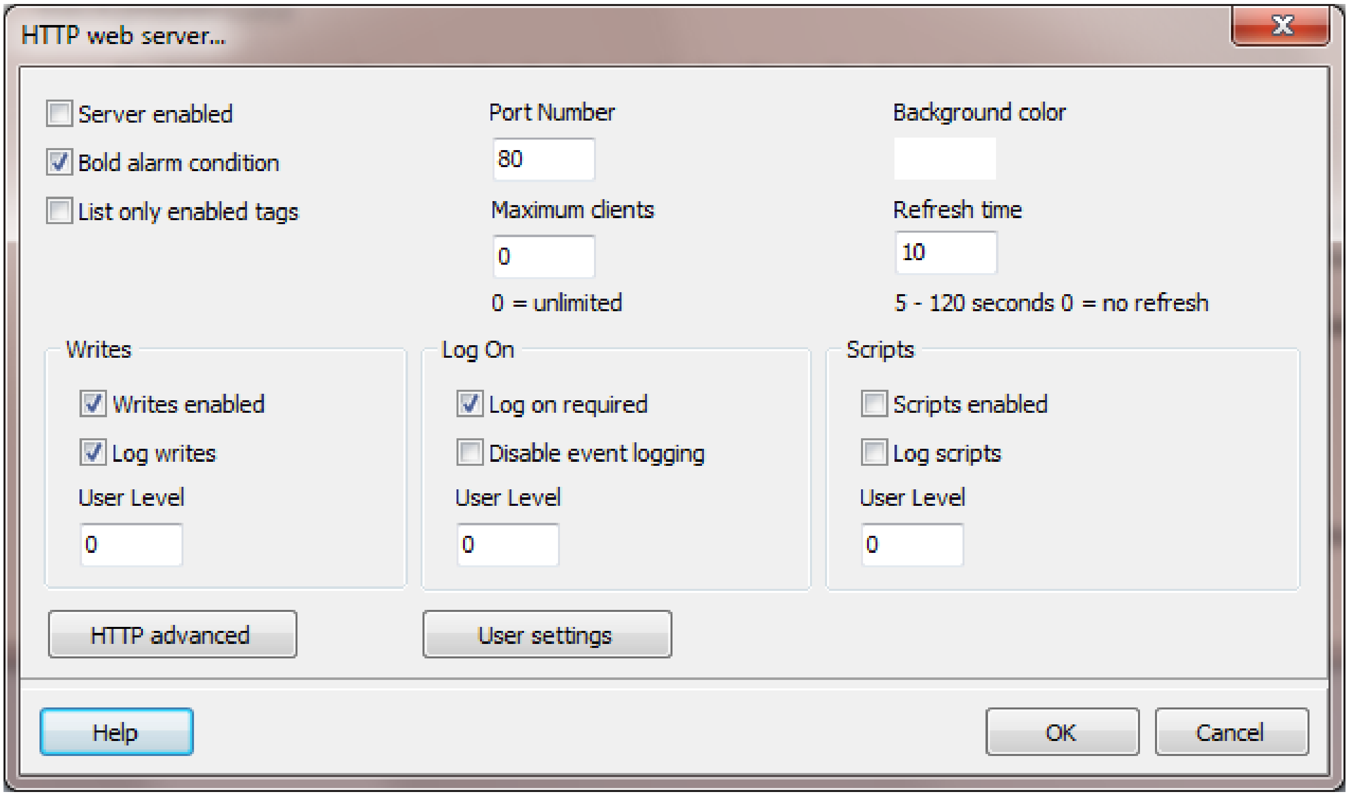
At midnight a new log file is created and the old log file is closed.

The log files are stored in the path defined in the Configuration/Settings dialog.

If trending is to be used in a graphic window the point(s) to be trended must be configured for logging.

HTTP WEB SERVER

The built in web server is 100% HTTP code. User pages can include other code types. The pre-configured web server makes it easy to publish the data in the HMI.



HTTP web server...

☐ Server enabled
☑ Bold alarm condition
☐ List only enabled tags

Port Number: 80
Maximum clients: 0
0 = unlimited

Background color
Refresh time: 10
5 - 120 seconds 0 = no refresh

Writes
☑ Writes enabled
☑ Log writes
User Level: 0

Log On
☑ Log on required
☐ Disable event logging
User Level: 0

Scripts
☐ Scripts enabled
☐ Log scripts
User Level: 0

Server enabled

This checkbox must be checked for the server to be active at runtime.

Bold alarm condition

On pages displaying point (tag) data if the alarm item is enabled and active the text will be bold.

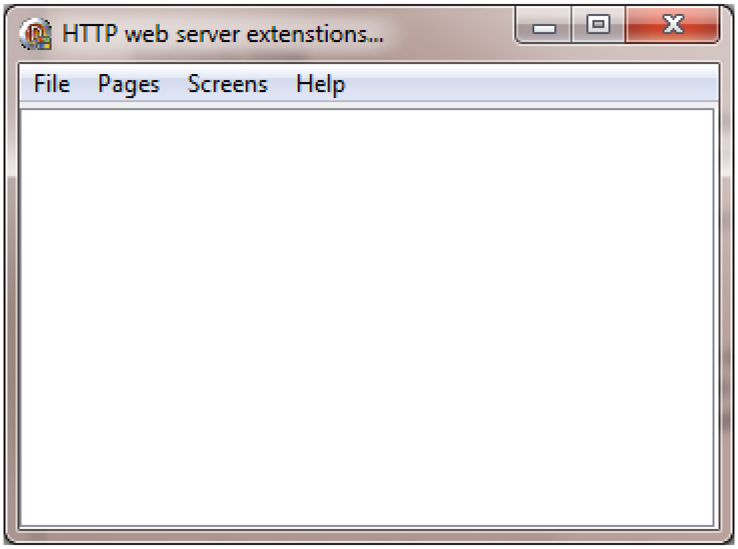
List only enabled tags

Some tags in the database may not be active. There are many possible reasons. One reason could be the tag was forced inactive via the runtime override file. If this attribute is enabled the inactive tags will not be displayed.

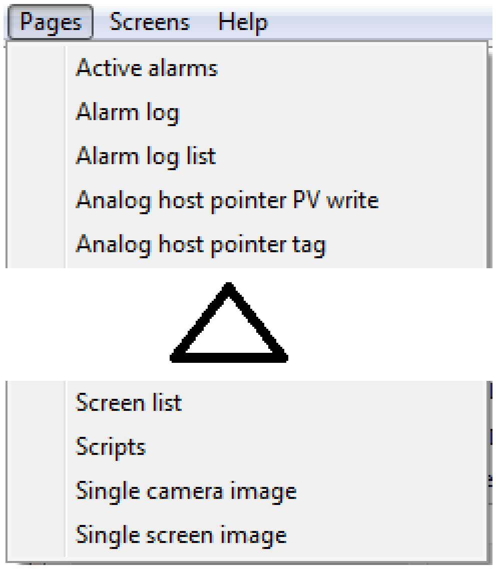
HTTP Advanced

This is used to add custom HTTP code to the various embedded screens. Adding HTTP code may prevent the embedded pages from correct interaction with the client browser. This includes a total failure of the client to render the page.

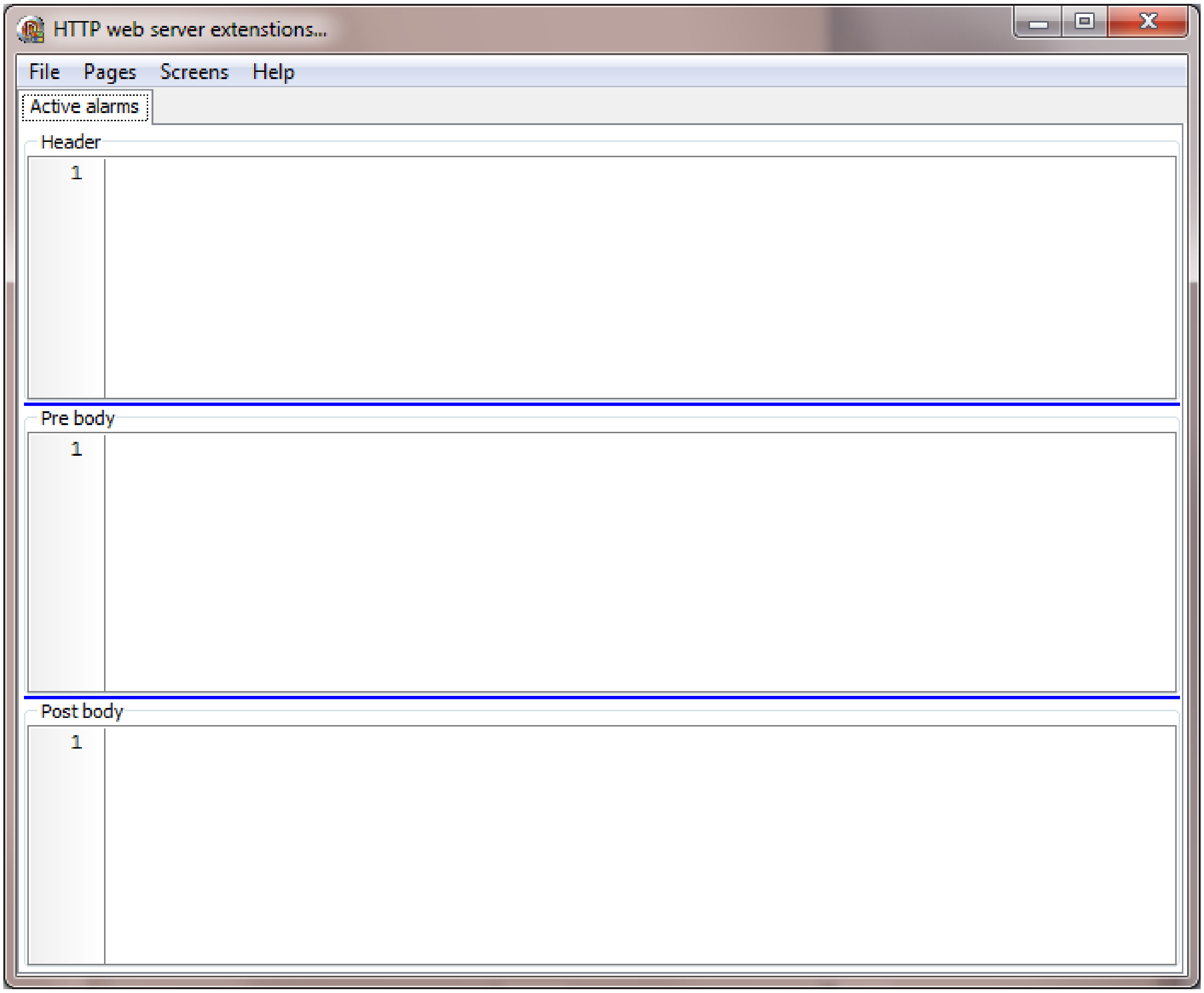
This is the HTTP advanced window.


HTTP web server extenstions...
File
Pages
Screens
Help

The "Pages" menu lists all the built in screens. The "Screens" list all the graphic screens.


Pages
Screens
Help
Active alarms
Alarm log
Alarm log list
Analog host pointer PV write
Analog host pointer tag
Screen list
Scripts
Single camera image
Single screen image

When selecting a page or screen the screen displays the three areas that code can be added.


HTTP web server extenstions...
File
Pages
Screens
Help
Active alarms
Header
1
Pre body
1
Post body
1

WARNING: Adding code to these sections may cause the feature to fail partially or completely in the web browser, rendering the pages unreadable by the client.

Each web page has three sections, none, one or all of the sections may be used.

Header

The text in this field is placed/inserted before the **</HEAD>** statement in the header section of the page. For screen pages, if the screen has a 'header' it is inserted following the page type 'header' section.

Pre body

The text in this field is inserted just after the first **BODY** statement. In most pages the first statement sets the background color. For other pages it is inserted after the second statement that sets the form action. For the index/home page it is inserted after the page title. For screen pages, if the screen has a 'pre body' it is inserted following the page type 'pre body' section.

Post body

The text in this field is inserted just before the **</BODY>** statement. For screen pages, if the screen has a 'post body' it is inserted before the page type 'post body' section.

Notes:
The sections for the pages are stored in separate files located in the project directory. Each file is loaded before the page is rendered. Changes made between page loads will reflect changes made to the text of the file.

For screens, the sections are loaded when the screen is opened for rendering and the sections are stored with the screen file. Changes made will only display if the window is closed and then opened.

Use `<STYLE>H2 {FONT-SIZE: 1pt; COLOR: #FFFFFF};</STYLE>` in the 'pre body' section to hide the page title.

Use `<STYLE>H3 {FONT-SIZE: 0pt; COLOR: #FFFFFF};</STYLE>` in the 'header' to hide the 'Home' link.

The following in the 'pre body' section, will hide the text at the top of the page. Really it changed all text with the 'A' tag.

```
<STYLE> A {FONT-SIZE: 0pt; COLOR: #FFFFFF};</STYLE>
```

These commands are case sensitive.

To redirect to another page when a page opens place this in the header:
<meta HTTP-EQUIV="REFRESH" content="0; url=/SCRN/ID=Screen name">

Example: `<meta HTTP-EQUIV="REFRESH" content="0; url=/SCRN/ID=Pump Pressure Trend">`

To open a screen via HTML use: "/SCRN/ID=Screen name". Replace 'Screen name' with the name of the screen.
Example: <A HREF="/SCRN/ID=Pump Pressure Trend">Pump Pressure Graph</A><BR>

To open a **custom page** via HTML use: "/CP/Page name". Replace 'Page name' with the file name. Do not include the path.

Example: <A HREF="/CP/My only page.html">One custom page</A><BR>

Custom HTML pages must be in the project directory '\HTTP Server\Custom pages\' path.

Parsing custom pages

Each tag must use the head marker '##=' and the tail marker '$$?'.
Example: ##=PT(Tank.Process Variable Analog) $$?

Notes:
1) All text is case sensitive.
2) Files larger than 32K are not processed.

Tag commands

Prefix	**Operation**
PT	Collects the value of a point.item
SG	Collects the value of a script global
DT	Date time display

Points

The value of the point.item will be returned.
##=PT(Tank.Process Variable Analog)$$?

The value of the point.item will be returned with 3 decimal places. The default is 2 and does not need to be present.
##=PT(Tank.Process Variable Analog~D3)$$?

The value of the point.item will be returned using the supplied strings. The default is True/False and does not need to be present.
##=PT(Tank.Process Variable Digital~TOpen~FClosed)$$?

If the point.item is not found 'PTERROR' is returned.

Script globals

The value of the script global will be returned. (Section.item)
##=SG(Logged on.User)$$?

The value of the script global will be returned and limited to the first ten characters. Default is all characters and does not need to be present.
##=SG(Logged on.User~L10)$$?

If the script global is not found 'SGERROR' is returned

Date/Time

The date and/or time will be returned. This command uses the same format as the graphic engine. No format specified will use the system default.

```
##=DT$$?                              // as defined by the OS
##=DT(h:n:s d/m/yy)$$?                // 13:6:36 24/5/11
##=DT(mm/dd/yyyy hh:mm:ss)$$?         // 05/24/2011 13:06:36
##=DT(mm-dd-yyyy hh:mm:ss)$$?         // 05-24-2011 13:06:36
##=DT(hh:mm:ss)$$?                    // 13:06:36
```

Write tag via URL

A tag or script global can be written via a URL.

The URL is case sensitive.

If the command is received without error a '204 No content' is returned to the browser, otherwise, a 404 error will be returned.
If HTTP writes are not enabled a 403 error will be returned.
If HTTP logon required is enabled and the user's level is not sufficient, a 403 error will be returned.

To write a point

```
/CPW/PT?T=<tagname>&I=<item>&V=<value>
```

Examples:

```
/CPW/PT?T=Pump 1 Setpoint&I=Process Variable Analog&V=12.34
/CPW/PT?T=Pump 1 Run Command&I=Process Variable Digital&V=True
/CPW/PT?T=Pump 1 Run Command&I=Process Variable Digital&V=False
/CPW/PT?T=Pump 1 Run Command&I=Process Variable Digital&V=1
/CPW/PT?T=Pump 1 Run Command&I=Process Variable Digital&V=0
```

To write a script global

```
/CPW/PT?S=<section>&I=<item>&V=<value>
```

Example:

```
/CPW/PT?STrip report&I=Cause&V=Water entered motor from roof leak
```

To force a log out of the user use: "/Logout".

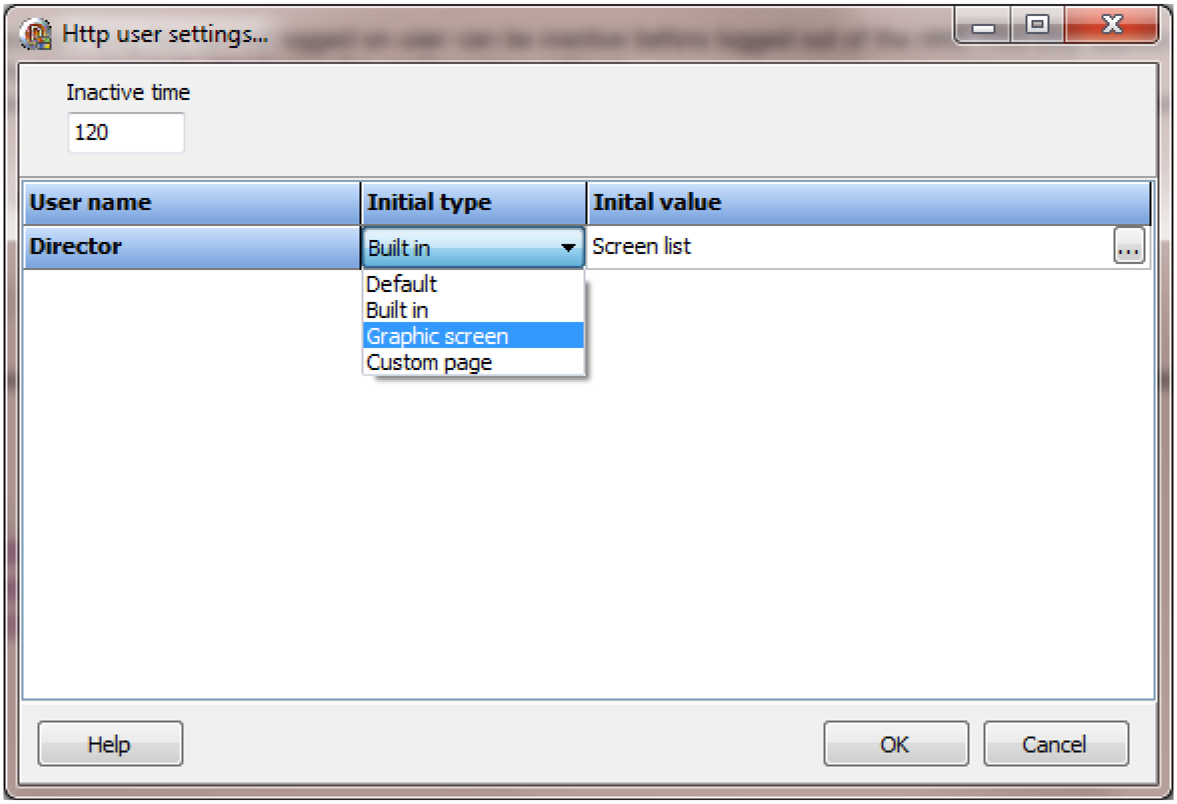
Example: `<A HREF="/logout">Log out</A><BR>`

This example places a button on the form and when selected the user will log out.

```
<form
action="/logout.html" method="get">
<input type="submit" value="Log out">
</form>
```

User settings

If logon is required, and a user logs in this configuration is used to display the first window the user access.


Http user settings...
Default
Built in
Graphic screen
Custom page
...
Help
OK
Cancel

Inactive time: 120

User name	Initial type	Inital value
Director	Built in	Screen list

Note: The 'Log on required' attribute must be enable for these features to function.

Inactive time

This defines how long the named logged on user can be inactive before logged out of the HMI. This only applies to access via a web browser. For inactivity in the HMI see the 'User Inactivity Monitor' in the configuration settings.

Note: If the refresh time is greater than zero (time > 0) the user must change pages to reset the inactivity timer.

Each user can have the following settings. If a setting is not used the default setting will be used.

Initial type/value

This defines the first page the user can access after log on. It can be a graphic screen, a built in page or a custom page. Default page is the built in 'Home' page.

Port number

The TCP/IP port number the port is to use. 80 is the default.

Maximum clients

The maximum number of client connections. 0 = unlimited and is the default.

Background color

For browser supporting a window background color this is the desired color.

Refresh time

The elapsed time the browser is to delay before performing a refresh on the page. This is applied to pages displaying dynamic data. 10 seconds is the default. 0 seconds is no refresh. The page can always be refreshed via a refresh button or command in the browser.

Note: Automatic refresh will cause the page to reload. If the user has scrolled the window, after reload the page will not be scrolled.

Writes

Enabled: Enables the display of windows to set a tag value.
Log writes: All writes are logged to the event log. IP Address:Tagname : item number: value
User level: The logged on users level required to initiate a write command. If the user level is below this level the writable items will not be underlined.

Logon

Logon required: A user must log on the server before pages will be displayed.
User level: The logged on users level required to display pages.

If the user level is not high enough, the authentication will fail. If logon is successful an entry is created in the event log. IP Address:Logon : user name

Disable event logging: When "Logon required" is enabled and a user "logs on", an entry is added to the event log. If this attribute is enabled an entry will not be placed in the event log.

Note: Logon via HTTP or via the HMI screen does not affect the other logon. The logons are independent.

Scripts

Enabled: Enables the display of window to execute scripts.
Log scripts: All script execute commands are logged to the event log. Script name : date/time
User level: The logged on users level required to execute a script.

Note: These three groups of settings have interaction. If logon required is false, "writes enabled", will determine if write commands will be executed. If logon required is true and writes enabled is true, the logged on user level and writes user level determine if write commands will be executed. This also applies to executing scripts.

Anyone browse without writes/scripts: Logon required = false, Writes enabled = false, Scripts enable = false

Anyone browse with writes/scripts: Logon required = false, Writes enabled = true, Scripts enable = true *least restrictive

Logon with browse only: Logon required = true, Writes enabled = false, Scripts enable = false **most restrictive

Logon with browse writes/scripts: Logon required = true, Writes enabled = true, Scripts enable = true

Notes:
1. Event logs are displayed latest entry at the top and in descending time.
2. Custom HTML pages must be in the project directory '\HTTP Server\Custom pages\' path.

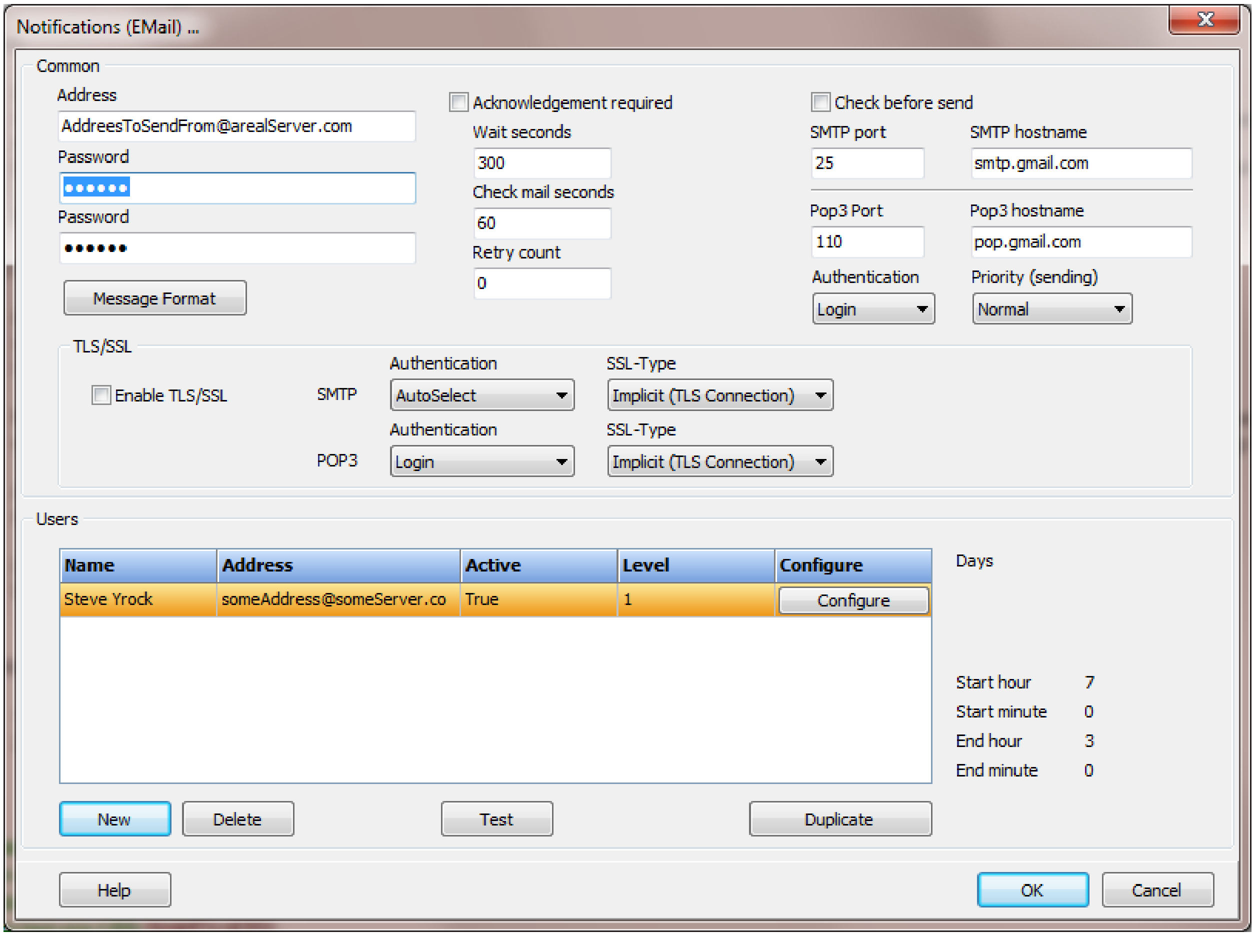
NOTIFICATIONS

The HMI offers two methods, Email and SMS, to send notifications when and alarm condition is detected.

Email notifications require an email account and connection to the email server.

SMS notifications require a cell phone that can be accessed via a serial driver and appears as a modem that supports the AT command set and an active cell phone account that includes SMS messaging.

EMAIL


Notifications (EMail) ...

Common

Address: AddreesToSendFrom@arealServer.com

Password: ••••••

Password: ••••••

☐ Acknowledgement required

Wait seconds: 300

Check mail seconds: 60

Retry count: 0

☐ Check before send

SMTP port: 25

SMTP hostname: smtp.gmail.com

Pop3 Port: 110

Pop3 hostname: pop.gmail.com

Authentication: Login

Priority (sending): Normal

TLS/SSL

☐ Enable TLS/SSL

SMTP Authentication: AutoSelect

SMTP SSL-Type: Implicit (TLS Connection)

POP3 Authentication: Login

POP3 SSL-Type: Implicit (TLS Connection)

Users

Name	Address	Active	Level	Configure
Steve Yrock	someAddress@someServer.co	True	1	Configure

Days

Start hour 7

Start minute 0

End hour 3

End minute 0

Address

The email address to be used as the sender of the message. This will be the address/name used to connect with the mail server for transmitting send and receiving messages. A blank address will disable notifications.

Password

The password for the sending/receiving email address. Both password fields must match. (Password can be blank)

Acknowledgment required

If enabled the notification is sent to the next user with a higher level configured to be notified. If 'acknowledgments required' is not enabled all configured users are notified as configured. If 'acknowledgments required' is enabled the configured users are notified in configuration order and level order until the first user acknowledges the message. **Note:** The acknowledgment must be a reply containing the message ID line as the last line. The best method to reply is; select the reply command in the client and then select send without any additions or changes. If the email parser cannot determine which notification message the reply acknowledges, the reply will be ignored.

Acknowledge wait time

When a notification is sent and acknowledgments are required this is the amount of time to wait, in seconds, for an acknowledgment to be received before sending a notification to the next level user. An acknowledgment stops the sending of notifications for the alarm. If the wait time is zero the user level setting is ignored and a notification is sent to all configured users for the alarm. If that is the configuration and the retry count is not zero the notification will immediately be sent again up to the value of the retry count.

Check mail received

This is the amount of time. in seconds, to wait between polling the mail server for new mail.

Retry count

This is the number of additional times to attempt a notification. If an acknowledgment is not received from any user configured for the notification after all users have been processed the process is restarted if the count has not been reached.
Note: If Gmail is the email host, the default settings in Gmail need to be changed to "2. When messages are accessed with POP delete Gmail's copy." This allows the HMI to properly read/track and delete acknowledgments.

Check before sending

Some mail servers require the sender to check for incoming mail before the sender can transmit mail.

SMTP port

The mail servers SMTP port number. (Simple Mail Transfer Protocol (SMTP) used for transmissions of emails across the internet.)

SMTP hostname

The mail servers SMTP name. This field must be valid.

Pop3 port

The mail server’s POP3 port number. (Post Office Protocol version 3 (POP3), used to retrieve e-mail from a remote server.)

Pop3 hostname

The mail server’s POP3 server name. If 'check before send' or 'acknowledgment required' is enabled this field must be valid.

Pop3 Authentication

The Authentication protocol used to validate the address/user with the pop3 server. (SMTP server authentication is automatic)

Priority (sending)

A flag to indicate the message priority.

TLS/SSL (Transport Layer Security (TLS) protocol Secure Sockets Layer (SSL) protocol)

Enable TLS/SSL

The server must support TLS/SSL protocol.

SMTP

Authentication

When TLS/SSL is enabled this is the type of authentication to use for email sending.

SSL-Type

When TLS/SSL is enabled this is the type of connection.

Priority

When TLS/SSL is enabled, a flag to indicate the message priority.

POP3

Authentication

When TLS/SSL is enabled this is the type of authentication to use for email sending.

SSL-Type

When TLS/SSL is enabled this is the type of connection.

Test button

The program will attempt to send a test email to the selected user, using the common settings. In the results, near the bottom, a string "****Notify SMTP test complete**** Error: 0" will be inserted. If the error is zero (0) the test was successful.

TLS/SSL testing

The settings used for testing TLS/SSL with Gmail:

SMTP host: smtp.gmail.com
SMTP port: 465
Authentication: Autoselect
SSL-Type: Implicit (TLS Connection)
Priority: Normal

POP3 (if required)
POP3 host: pop.gmail.com
SMTP port: 995
Authentication: Login
SSL-Type: Implicit (TLS Connection)

Address and password, the account values.

The settings used for the testing TLS/SSL with CenturyLink:

SMTP host: smtp.centurylink.net
SMTP port: 587
Authentication: Autoselect
SSL-Type: Explicit (STARTTLS)
Priority: Normal

POP3 (if required)
POP3 host: pop.centurylink.net
SMTP port: 995
Authentication: Login
SSL-Type: Implicit (TLS Connection)

Address and password, the account values.

Message Format

The message header and body settings are configured to display alarm data fields. All messages are sent as plain text. Email messages have few restrictions on size. SMS messages have severe limits. Some providers limit the character count to 100 characters. Normally, the limit is 160 characters for the Latin alphabets and 70 for non-Latin alphabets.

Note: The header settings are not used for SMS notifications.

Users

Each address to be notified has several settings. A user/address can be in the list more than once.

Name

A name to make viewing and working with the list easier. Note: When using a script to send a message via a user name, the first name in the list to match the name is selected.

Active

If true the processing of this user is included when an alarm arrives. This can be used to prevent notifications to the user without changing other settings. Example: The user goes on vacation, sick days, etc.

Address

The address for emails or telephone number for SMS, of the recipient of the message.

Level

This is the level (1 - 5000) used to determine the order of notification for an alarm when 'acknowledgments required' is enabled.
If Joe is level 3 and Bob is level 4, a notification is first sent to Joe. If an acknowledgment is not received after the wait time has elapsed a notification is sent to Bob. If 'acknowledgments required' is not enabled this field is not evaluated.

Day

The day of the week the user is to be included in notifications.

Start hour, start minute (24hour)

The beginning time of the day the user is to be included in notifications.

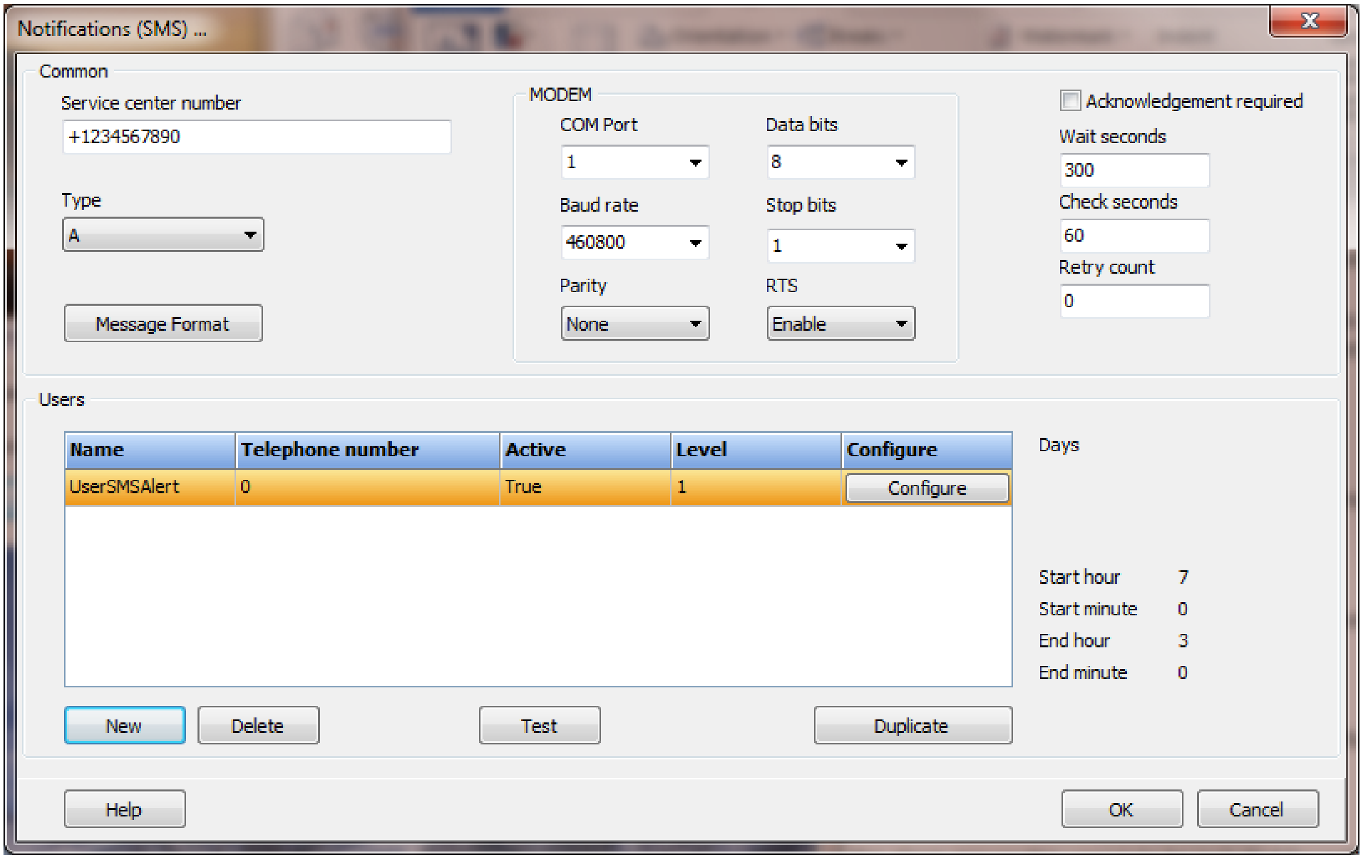
End hour, end minute (24hour)

The ending time of the day the user is to be included in notifications.

Alarm groups

These are the alarm groups this user is to be included for notifications.

SMS



Common

Service center number: +1234567890

Type: A

MODEM

COM Port: 1

Data bits: 8

Baud rate: 460800

Stop bits: 1

Parity: None

RTS: Enable

☐ Acknowledgement required

Wait seconds: 300

Check seconds: 60

Retry count: 0

Users

Name	Telephone number	Active	Level	Configure
UserSMSAlert	0	True	1	Configure

Days

Start hour 7

Start minute 0

End hour 3

End minute 0

Note: If the connection to the cell phone is lost, (e.g. HMI execution is terminated, USB cable is disconnected, etc.) during the transfer of the text portion of the message to the cell phone, the cell phone could become unresponsive. The solution; turn off the cell phone and then turn the cell phone back on.

Common

Service center number

The telephone number, supplied by your cell service provider, to access the SMS network. Using AT&T, it is listed as the "Text message center address".

Type

A: Samsung A887
B: Nokia C2-01 (SMS send only, note 1)

Both types should work with all phones from the same manufacture. If you have a phone of a different manufacture/type and have tried both types without success, please contact support. There is no standard for cell phone access to send/receive SMS messages. We want to support as many phones as possible.

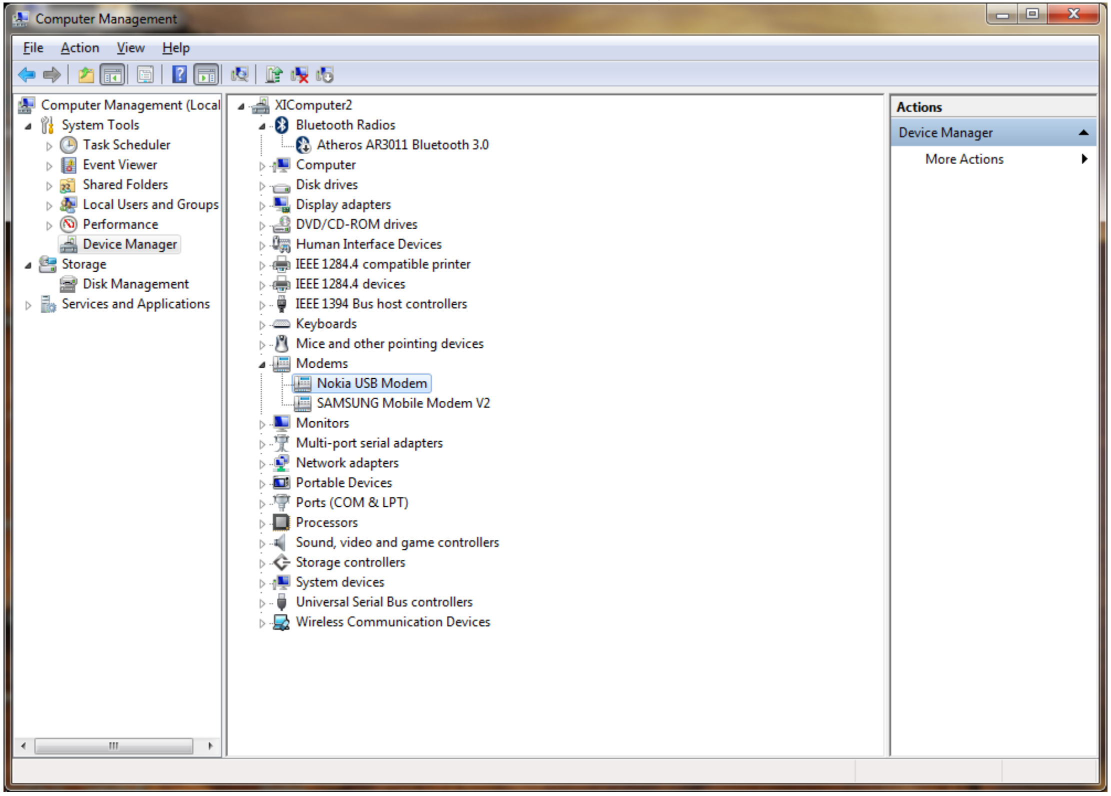
Notes:
1. The Nokia C2-01 does not support reading SMS messages via the AT command set. "Acknowledgment required" logic will not function.

MODEM

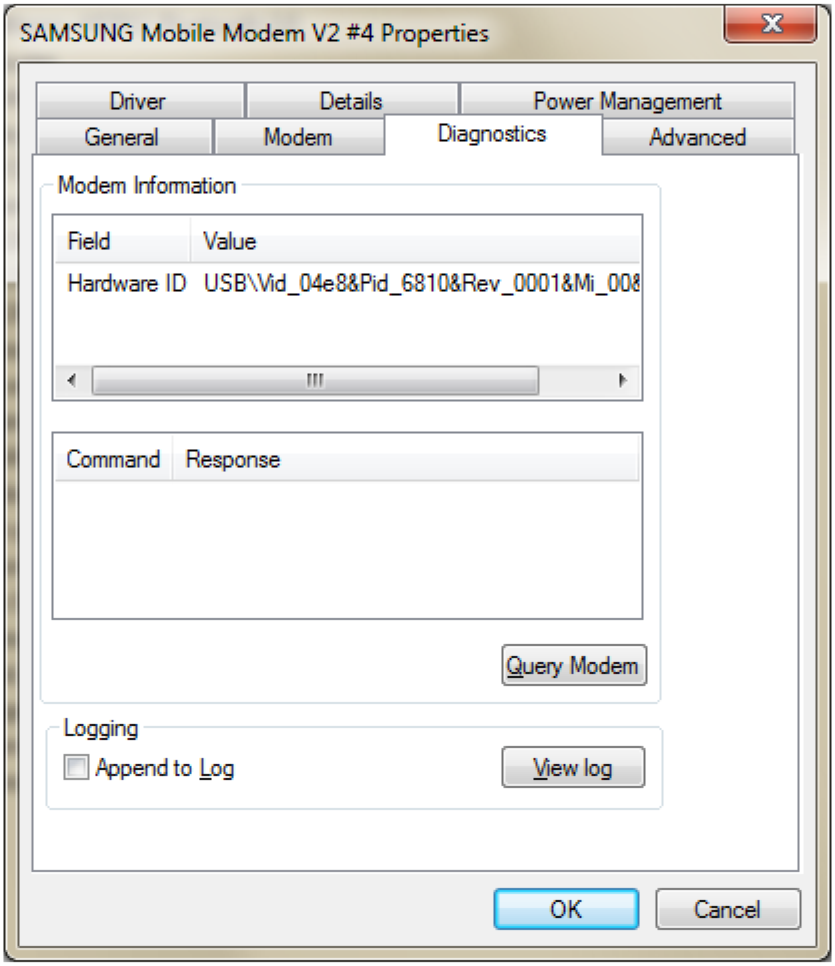
Some cell phones install drivers for USB that appear as serial ports and MODEMS. The HMI needs the MODEM driver.

For Samsung, installing the "PC Studio" installed the drivers. "PC Studio" can be removed, if not needed, after the drivers are installed. Another method to install the drivers might exist.
For Nokia, the "Nokia_Connectivity_Cable_Driver_eng.msi" was used to install the drivers.

Below is a picture of the MODEM drivers in the "Device manager". Right click on the MODEM, select "Properties" and find the "Baud rate" and "Com port" number.


Computer Management
File
Action
View
Help
Computer Management (Local
System Tools
Task Scheduler
Event Viewer
Shared Folders
Local Users and Groups
Performance
Device Manager
Storage
Disk Management
Services and Applications
XIComputer2
Bluetooth Radios
Atheros AR3011 Bluetooth 3.0
Computer
Disk drives
Display adapters
DVD/CD-ROM drives
Human Interface Devices
IEEE 1284.4 compatible printer
IEEE 1284.4 devices
IEEE 1394 Bus host controllers
Keyboards
Mice and other pointing devices
Modems
Nokia USB Modem
SAMSUNG Mobile Modem V2
Monitors
Multi-port serial adapters
Network adapters
Portable Devices
Ports (COM & LPT)
Processors
Sound, video and game controllers
Storage controllers
System devices
Universal Serial Bus controllers
Wireless Communication Devices
Actions
Device Manager
More Actions

Sometimes after accessing the cell phone with the manufactures application, the cell phone will not respond. Query the modem, in the driver settings, to reset the communications link.


SAMSUNG Mobile Modem V2 #4 Properties
Driver
Details
Power Management
General
Modem
Diagnostics
Advanced
Modem Information
Query Modem
Logging
View log
OK
Cancel

Field	Value
Hardware ID	USB\Vid_04e8&Pid_6810&Rev_0001&Mi_00&

Command	Response

☐ Append to Log

Acknowledgment required

If enabled the notification is sent to the next person with a higher level configured to be notified. If 'acknowledgments required' is not enabled all configured users are notified as configured. If 'acknowledgments required' is enabled the configured users are notified in the configuration order and level order until the first address acknowledges the message. **Note:** Any acknowledgment from the user will acknowledge all notifications for that user.

Wait seconds

When a notification is sent and acknowledgments are required, this attribute is the amount of time to wait, in seconds, for an acknowledgment to be received before sending a notification to the next higher level user. An acknowledgment from a user stops the sending of notifications for the alarm. If the wait time is zero, the user level setting is ignored and a notification is sent to all configured users for the alarm.

Check seconds

This is the amount of time. in seconds, to wait between polling the cell phone for a new message.

Retry count

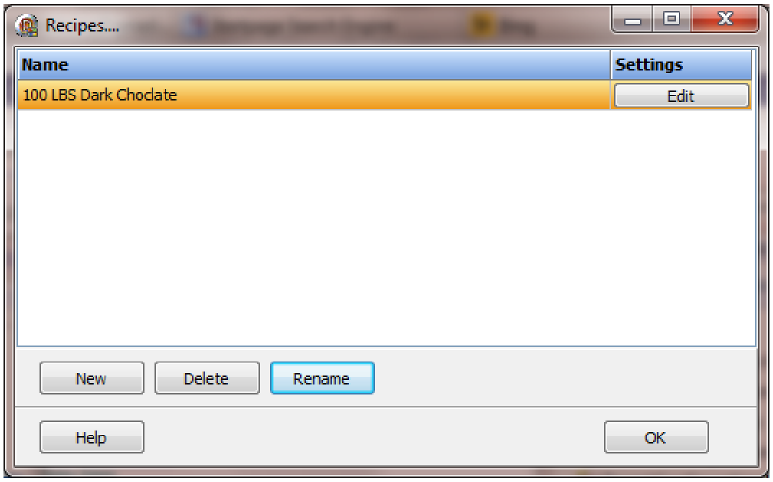
This is the number of additional times to attempt a notification. If an acknowledgment is not received from any user configured for the notification after all users have been processed the process is restarted if the count has not been reached.

Message format

Refer to the message format for Email above for information.

Recipes

The HMI supports an unlimited number of recipes.



Name	Settings
100 LBS Dark Choclate	Edit

Each recipe is listed in the window.

To create a new recipe select the "New" button and enter a name. Each name must be unique across all recipe names. The number of permissible recipes is limited by the license purchased.

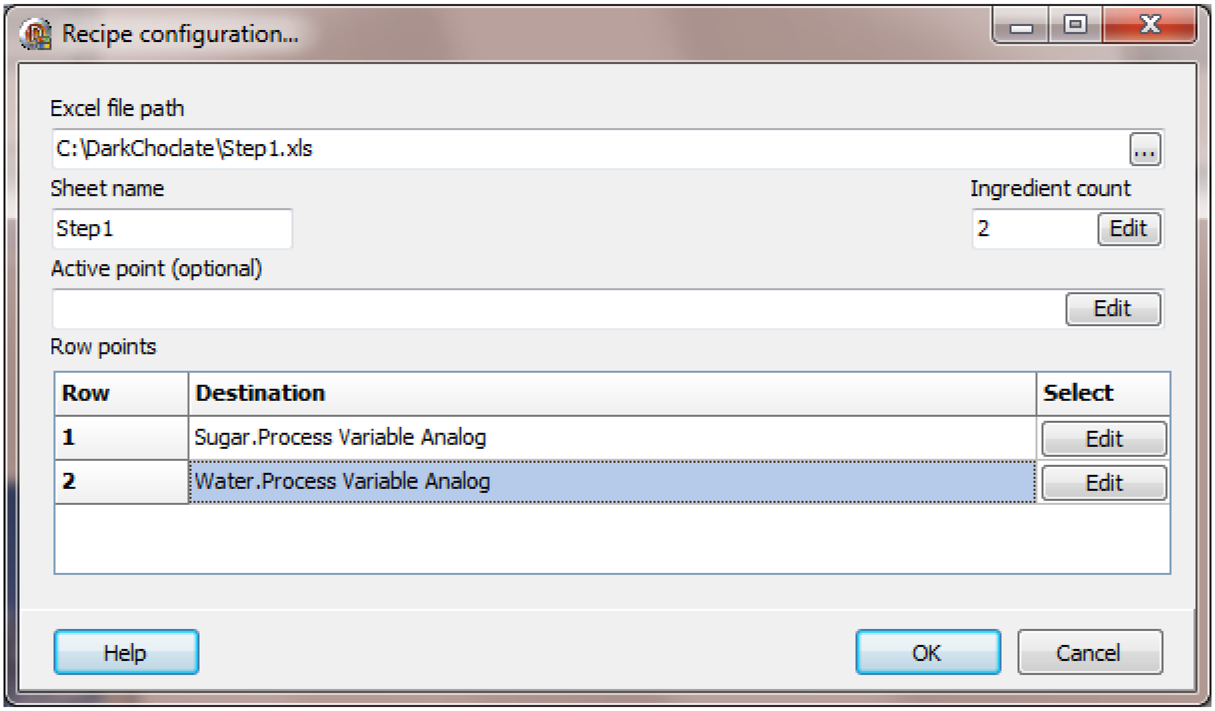
To rename a recipe select the "Rename" button and supply a new name.

To delete a recipe select the "Delete" button.

Notes:

1) Excel does not need to be installed on the computer for the HMI to read the 'XLS' sheet.

2) To save processing time, the sheets are loaded at program start and held in memory. To reload a sheet without stopping and restarting monitoring see the ReloadRecipeSheet.



Excel file path
C:\DarkChoclate\Step1.xls

Sheet name
Step1

Ingredient count
2

Active point (optional)

Row points

Row	Destination	Select
1	Sugar.Process Variable Analog	Edit
2	Water.Process Variable Analog	Edit

All the ingredients are in the rows. Each column is a recipe.
Excel does not need to be installed on the computer for the program to access the file. Initial release only Excel '.xls' files are supported.

Excel file path

This is the path to the Excel spreadsheet.

Sheet name

The name of the sheet containing the recipes. A blank name will use the default sheet.

Ingredient count

This is the number of rows in the spreadsheets. Each row is an ingredient.

Active point (optional)

This is a point that will be set true when an operation for the recipe is active. Once the operation is complete the point will be set false.

These are the operations that will operate on the point at runtime.

Writing recipe values to the points.

Writes are added to the queue for the 'port'. The active point is only active while the 'write' processing is performed to add the command to the queue. This will normally be a very short time. It does not indicate the data has been transferred to the external device.

Row points

Note: If only 4 rows are needed, set this value for 4 rows. This value can be increased later without loss of configuration data.

Each row has a point reference. At runtime when the LoadRecipe function is called the program will write the value of each row from the column specified to the point.

If the point reference is blank or the value from the Excel spreadsheet column/row reference is empty a write will not be performed.

Depending on the destination of the point reference and the number of rows, the amount of time to write the values is variable.

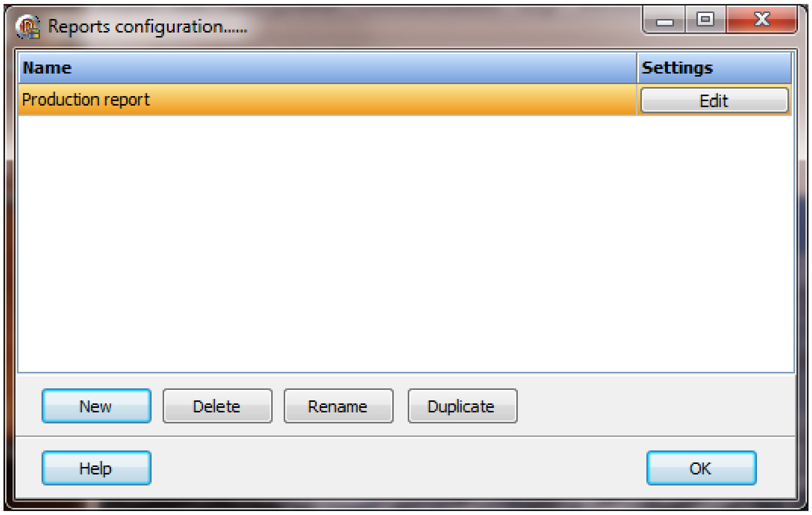
Monitor the 'Active point' above if completion of the writes is required.

If the PLC needs to know when the writes are complete, set up the last ingredient as a flag. Clear the flag before the LoadRecipe function is called and use the last row to set the flag. The flag could be an integer checksum off all the rows for the column. The external device can then validate against the flag to verify all the ingredient values are correct for the recipe.

Note: Due to possible write errors or the order the destination device processes the write commands, the write order is not guaranteed.

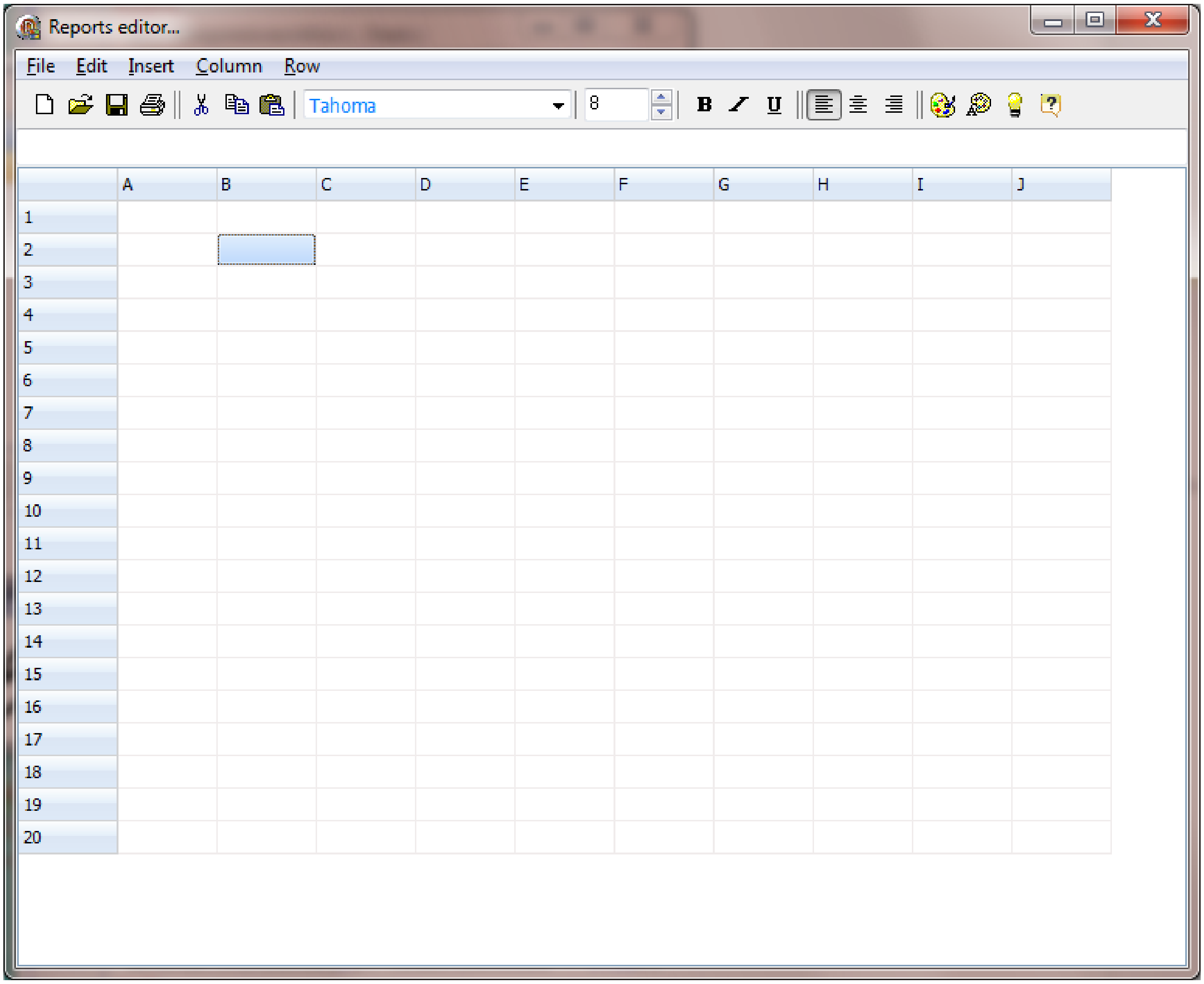
REPORTS

The HMI supports an unlimited number of reports.


Reports configuration......
Name
Settings
Production report
Edit
New
Delete
Rename
Duplicate
Help
OK

Each report is listed in the window.

Each report is comprised of columns and rows. The cells can contain plain text or the value of a point or script global. The text font, color, attributes, etc. can be configured for each cell.


Reports editor...
File Edit Insert Column Row
Tahoma
8
A B C D E F G H I J
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

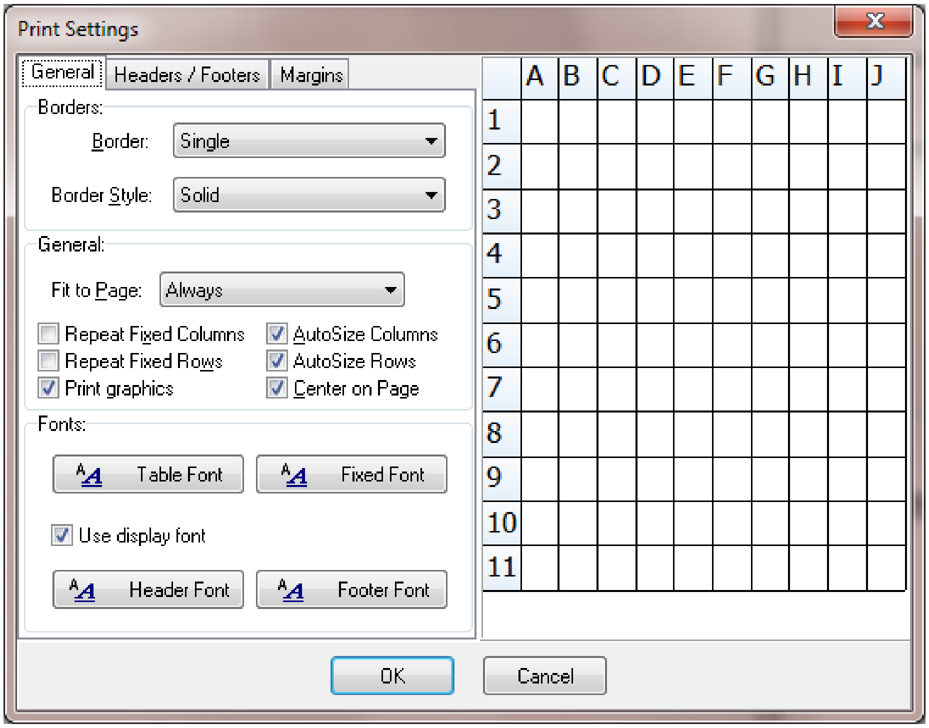
FILE MENU

IMPORT	The import menu is used to import a report or CSV (command separated values) file.
SAVE	Save the report. Each report is saved in a separate file.
PREVIEW	This will print the report applying the settings and configuration values that are possible at design time.
TEST REPORT	This will export the report command as if at runtime. At settings will be applied to creating the report(s).

EDIT MENU

PRINT SETTINGS

Various print settings.



Print Settings
General
Headers / Footers
Margins
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10
11
Table Font
Fixed Font
Header Font
Footer Font
OK
Cancel

Borders:

Border: Single

Border Style: Solid

General:

Fit to Page: Always

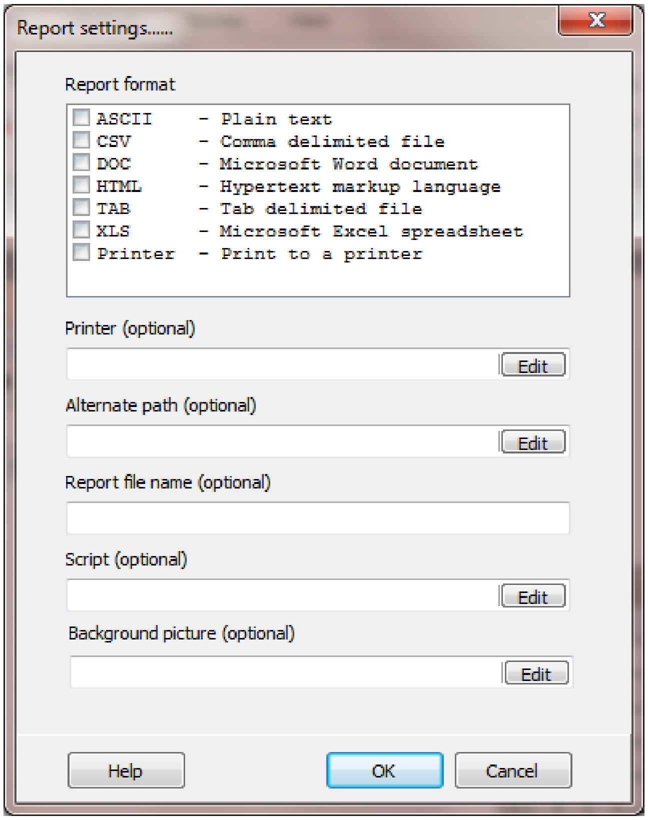
☐ Repeat Fixed Columns
☑ AutoSize Columns
☐ Repeat Fixed Rows
☑ AutoSize Rows
☑ Print graphics
☑ Center on Page

Fonts:

☑ Use display font

Settings

Settings used to determine the output type when the report is generated at runtime.


Report settings......
Report format
Printer (optional)
Edit
Alternate path (optional)
Edit
Report file name (optional)
Script (optional)
Edit
Background picture (optional)
Edit
Help
OK
Cancel

```
☐ ASCII    - Plain text
☐ CSV      - Comma delimited file
☐ DOC      - Microsoft Word document
☐ HTML     - Hypertext markup language
☐ TAB      - Tab delimited file
☐ XLS      - Microsoft Excel spreadsheet
☐ Printer  - Print to a printer
```

Each report can be created in several formats.

Format	**Description**
ASCII	Plain text
CSV	Comma delimited file
DOC	Microsoft Word document
HTML	Hypertext markup language
TAB	Tab delimited file
XLS	Microsoft Excel spreadsheet
Printer	Print to the selected printer

DOC and XLS format do not require Excel or Word to be installed to create the report.

Printer name (optional)

This is the name of the printer to print the report. If this field is blank and the 'Printer' format is selected the default printer will be used.

Alternate path (optional)

This is the path to save the report. If this field is empty, the settings in the project configuration settings will be used (Log File Settings).

Report file name (optional)

This is an alternate file name for the report. If this field is empty, the name with the date and time of the report will be used. The date and time format configured for the computer will be used.
Example: Gas Flow Report 07~15~2011 11~08~07 AM

Note: Do not include a file extension. The correct extension will be added to the file name.

Script (optional)

This is a script to execute when the report is generated. The script is executed as the first step in generating the report.
There are two script commands specifically for report generation.
ReportSetCell and ReportSetCellColor.

Background picture (optional)

This is the path to a file that will be used as the background for the report. The picture is not exported. It was added to allow easier alignment of the cells to a report format.

SCRIPT

This is the script to run before the report is generated. To script functions are provided to change the cell value or color, ReportSetCell and ReportSetCellColor.

MERGE/UNMERGE

Use these commands to merge and unmerge cells. Use the "SHIFT" key and "ARROW" keys to select cells to merge. Merged cells cannot be merged with other cells. Unmerge the merged cell, select all the cells to be merged and merge.

NOTES:
1) Copying of merged cells is disabled.
2) Do not use merging if exporting to CSV or DOC.

INSERT MENU

If the first character of the cell is an '=' (equal sign) the cells is considered to be a calculation. When the report is rendered the cells contents will determine the value in the report for the cells location.

Cell commands

Prefix	**Operation**
PT	Collects the value of a point.item
SG	Collects the value of a script global
DT	Date time display
GF	Display a picture from a file

DATE/TIME

Date/Time

The date and/or time will be placed in the cell. This command uses the same format as the graphic engine. No format specified will use the system default. Note: This is a 'text' field type.

```
=DT                           // as defined by the OS
=DT(h:n:s d/m/yy)             // 13:6:36 24/5/11
=DT(mm/dd/yyyy hh:mm:ss)      // 05/24/2011 13:06:36
=DT(mm-dd-yyyy hh:mm:ss)      // 05-24-2011 13:06:36
=DT(hh:mm:ss)                 // 13:06:36
```

GLOBAL STRING

Script globals

The value of the script global will be placed in the cell.
(Section.item)
=SG(Logged on.User)

The value of the script global will be placed in the cell and limited to the first ten characters. Default is all characters and does not need to be present.
=SG(Logged on.User~L10)

PICTURE

Picture file

The picture is aligned to the top and left of the source cell. The picture will be stretched/shrunk to fit the cell. Merge cells for the picture to be viewed across many cells.
=GF(C:\test.bmp) //file name (complete path)

Note:
1) Exporting of pictures is only supported for XLS, DOC, HTML and printing.
2) Only XLS and printing produce good results. DOC and HTML will require after export manipulation for good visual display. The cause is lack of agreed standards for merged cells.

POINT VALUE

Points

The value of the point.item will be placed in the cell.
=PT(Tank.Process Variable Analog)

The value of the point.item will be placed in the cell with 3 decimal places. The default is 2 and does not need to be present.
=PT(Tank.Process Variable Analog~D3)

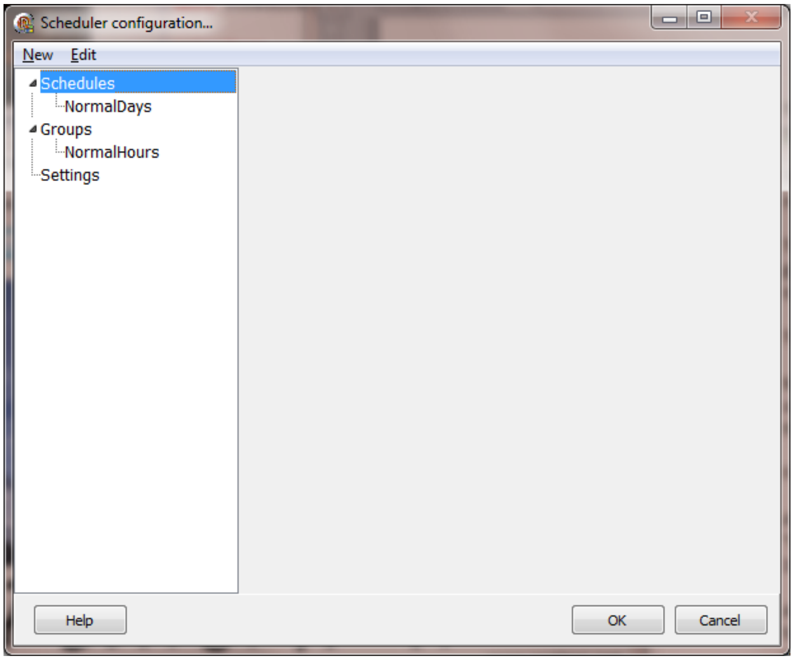
The value of the point.item will be placed in the cell using the supplied strings. The default is True/False and does not need to be present.
=PT(Tank.Process Variable Digital~TOpen~FClosed)

Note:
The commands listed are automatically formatted when using the report builder. The cell contents can be imported/exported and on import the format must be followed or the runtime report generator and the report builder will not function correctly.

COLUMNS/ROWS

These menus are used to add, insert, delete and change the column width/row height.

SCHEDULES


Scheduler configuration...
New
Edit
Schedules
NormalDays
Groups
NormalHours
Settings
Help
OK
Cancel

OVERVIEW

The scheduler consists of "schedules" and "groups".

Schedules define a start and optional end day/time.

Hourly

A selected minute and second in an hour of the day.

Daily

Every day at the selected time.

Day

On the selected day of the week (Sunday - Saturday) at the selected time.

Date

The selected date(s) (October 12) at the selected time.

Monthly

The selected day(s) of the month at the selected time.

The configured schedule creates event "triggers". One trigger for the start time and one for the optional end time.

The start time is a trigger to operate on a group. The start trigger must have at least one group selected.

The optional end time is also a trigger to operate on a group. If a group(s) is not configured for the end trigger, the end trigger will operate on the group(s) configured for the start trigger.

The time is entered in 24 hour notation.

Multiple schedules can concurrently be enabled. Each enabled schedule will execute in the order configured. The order is listed in the tree view at configuration.

For example:

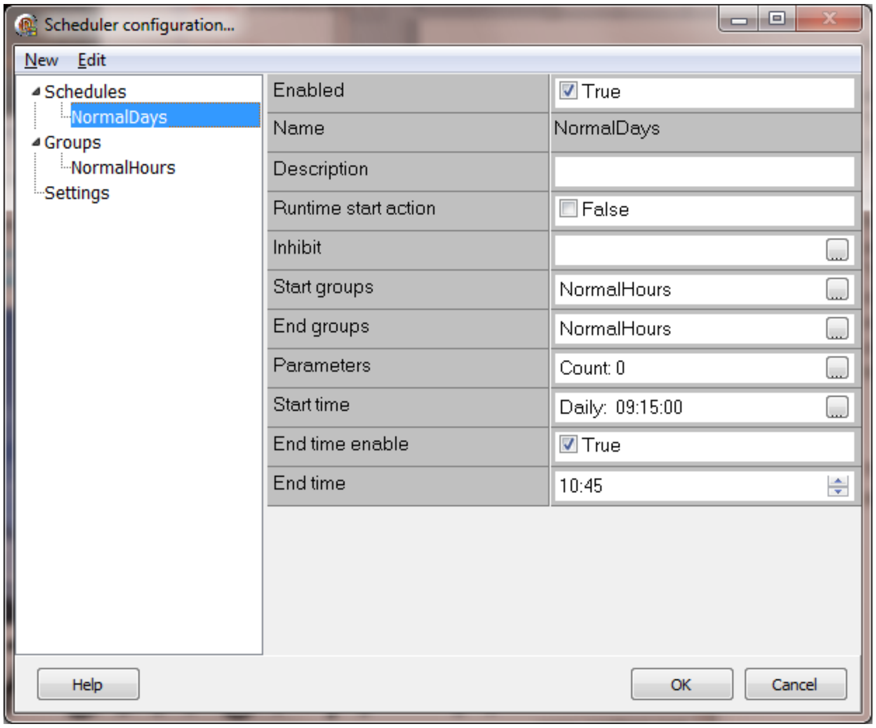
A schedule is created and named "All days" and configured for "Daily" operation. At 7:00:00 the lights are command on and at 19:00:00 the lights are command off.

Another schedule is created and named "Holidays" and configured for "Date" operation. All the holidays are selected for the year. The start and end times are the same as the "All days" schedule. In the "Holidays" schedule all the lights are commanded off. If non combining is not enabled the lights will be command off (if they are on). In this example, the "Holidays" schedule is only used to command the lights off, to override the "All days" schedule start time, and the "end time" in the "Holidays" schedule is not required.

NEW MENU

The new menu is used to create new schedules, groups and group items.

SCHEDULE


Scheduler configuration...
New
Edit
Schedules
NormalDays
Groups
NormalHours
Settings
Help
OK
Cancel

Enabled	☑ True
Name	NormalDays
Description	
Runtime start action	☐ False
Inhibit	
Start groups	NormalHours
End groups	NormalHours
Parameters	Count: 0
Start time	Daily: 09:15:00
End time enable	☑ True
End time	10:45

Enabled

The schedule must be enabled to be active.

Name

The name of the schedule. The name must be unique across all schedules.

Description

User defined string for the schedule.

Runtime start action enabled

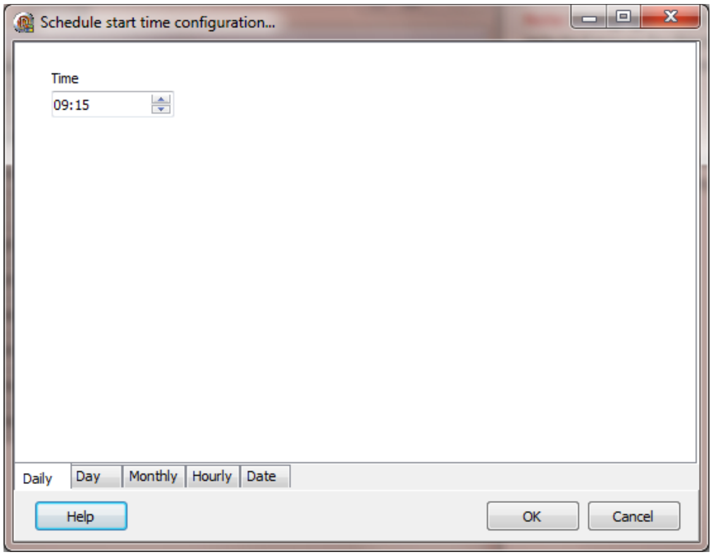
When runtime monitoring is started;
If the current time is after the start time and before the end time (if enabled) the start trigger event will execute.

Inhibit (optional)

If a point is selected and true the schedule will not execute, the triggers will not execute, until the point is false. If the start or end time has passed while the inhibit point is false, when the point becomes true, the elapsed triggers will not execute.

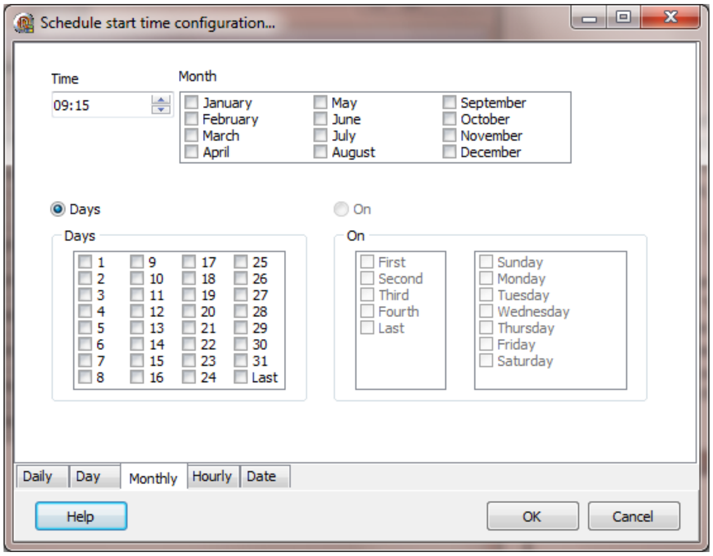
Start time and end time (optional)

The start and optional end time for the schedule.
If the start time type is "hourly" and the optional end time (minute) is enabled, the end time (minute) must be greater than the start time. If required to have an end time less than the start time, use two schedules with only a start time in each schedule. "A" schedule for the start time and "B" schedule as the end time.



Time: 09:15

Schedule start time configuration...
Daily
Day
Monthly
Hourly
Date
Help
OK
Cancel


Schedule start time configuration...
Month
☐ January
☐ February
☐ March
☐ April
☐ May
☐ June
☐ July
☐ August
☐ September
☐ October
☐ November
☐ December
○ On
On
☐ First
☐ Second
☐ Third
☐ Fourth
☐ Last
☐ Sunday
☐ Monday
☐ Tuesday
☐ Wednesday
☐ Thursday
☐ Friday
☐ Saturday
Days
☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8
☐ 9 ☐ 10 ☐ 11 ☐ 12 ☐ 13 ☐ 14 ☐ 15 ☐ 16
☐ 17 ☐ 18 ☐ 19 ☐ 20 ☐ 21 ☐ 22 ☐ 23 ☐ 24
☐ 25 ☐ 26 ☐ 27 ☐ 28 ☐ 29 ☐ 30 ☐ 31 ☐ Last
Daily
Day
Monthly
Hourly
Date
Help
OK
Cancel

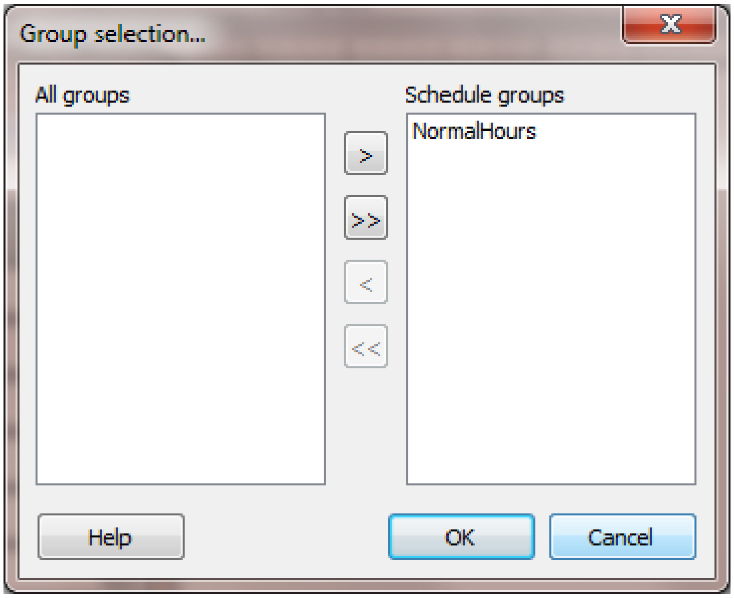
Time: 09:15

● Days

Groups (Start/End)

This is the list of groups that will be acted upon when this schedule is active and a trigger event occurs. The order in the schedule is used for runtime execution, not the order in the "tree view" of the main configuration window.

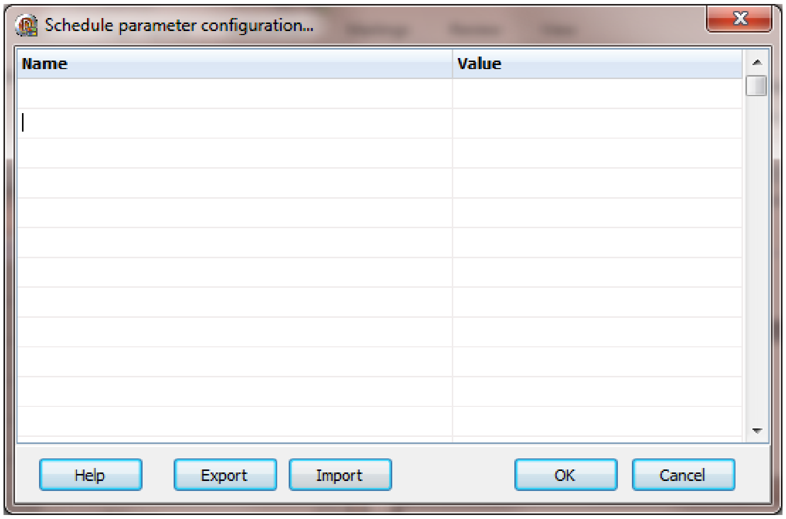
Note: Changing the text in the edit field does not change the selected groups for the trigger. Use the button in the text edit field to configure the groups for the trigger.


Group selection...
All groups
>
>>
<
<<
Help
OK
Cancel

Schedule groups: NormalHours

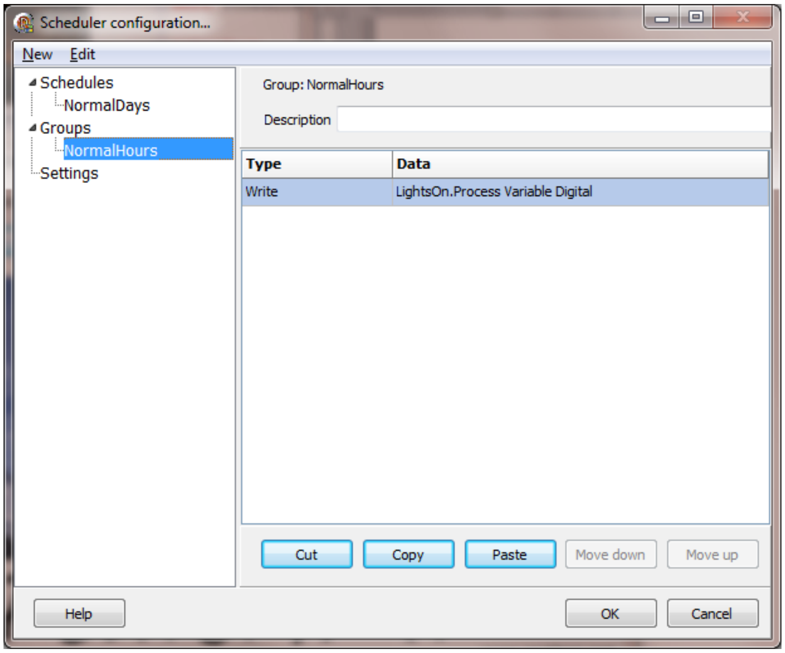
Parameters

This is a list of named-value pairs. The name must be unique for the schedule. These parameters can be used in groups for an action value.


Schedule parameter configuration...
Name
Value
Help
Export
Import
OK
Cancel

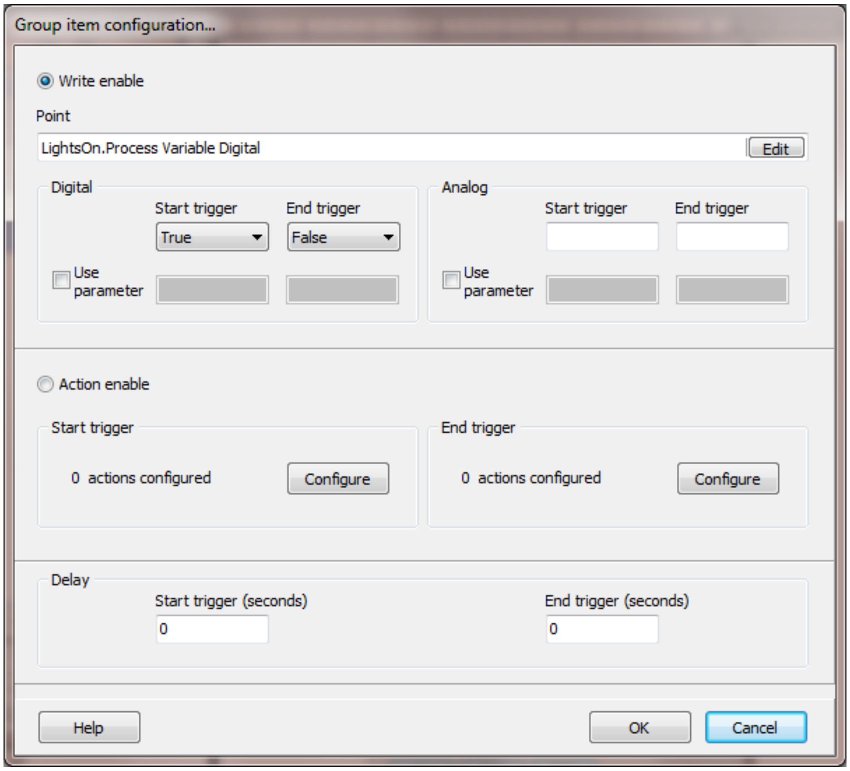
GROUP

Groups are collections of points and actions that execute commands.


Scheduler configuration...
New
Edit
Schedules
NormalDays
Groups
NormalHours
Settings
Description
Cut
Copy
Paste
Move down
Move up
Help
OK
Cancel

Group: NormalHours

Type	Data
Write	LightsOn.Process Variable Digital



● Write enable

Point: LightsOn.Process Variable Digital

Digital

	Start trigger	End trigger
	True	False
☐ Use parameter		

Analog

	Start trigger	End trigger
☐ Use parameter		

○ Action enable

Start trigger: 0 actions configured

End trigger: 0 actions configured

Delay

Start trigger (seconds): 0

End trigger (seconds): 0

Name

The name of the group. The name must be unique across all groups.

Description

User defined string for the group.

Write

All points must have an "Access Rights" of read/write.

Points have a start and end parameter.

Digital points, the value can be:

False	If the current value of the point is true, a write command will be issued to set the value false.
True	If the current value of the point is false, a write command will be issued to set the value true.
No action	The point will not be modified when the trigger event is executed.

Parameter

The value of a parameter in the schedule that called the group to perform the actions for the trigger is used. If the current value does not match the parameter a write command will be issued.

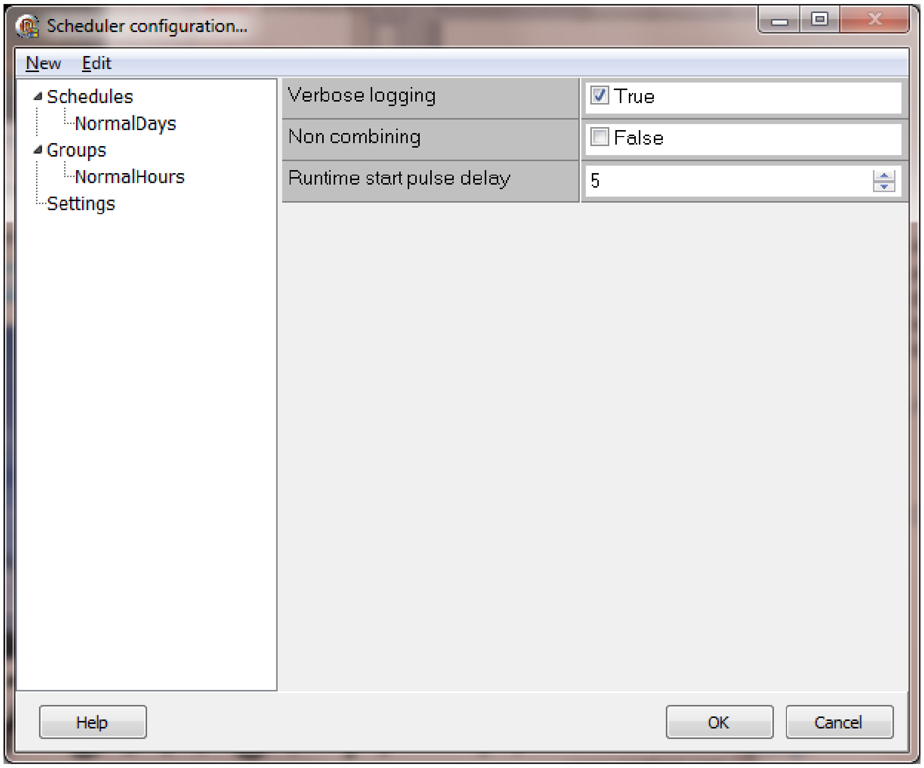
Analog points, the value can be any value the point data type allows or a parameter value of the schedule. If the current value does not match the parameter a write command will be issued. If the point quality is bad, a write command will not be issued.

Action

See the mouse commands for a list of possible actions.

Delay

A start trigger and/or end trigger. After the command is executed the next action can be delayed. The delay is in seconds and can range from 0 - 300 seconds. If the value is 0 the next action/write in the list will be executed without delay.


Scheduler configuration...
New
Edit
Schedules
NormalDays
Groups
NormalHours
Settings
Help
OK
Cancel

Verbose logging ☑ True
Non combining ☐ False
Runtime start pulse delay 5

Verbose logging

When enabled logging to the event file will be much greater than normal operation.

Non combining

When a point.item is referenced in more than one enabled schedule and both schedules execute at the same time, the point.item will not be combined for one command.

Example

Group 1

LampSet_1.Process variable digital start trigger = true, end trigger = false
LampSet_2.Process variable digital start trigger = true, end trigger = false
LampSet_3.Process variable digital start trigger = true, end trigger = false
Execute script XYZ

Group 2

LampSet_1.Process variable digital start trigger = false
LampSet_2.Process variable digital start trigger = true
LampSet_3.Process variable digital start trigger = false

Schedule - Everyday (Sunday - Saturday)

This schedule sets all the lamps on at 7:00 and off at 17:00.
Start time 7:00, end time 17:00
Group 1
This schedule sets all the lamps on at 7:00 and off at 17:00.

Schedule - Stored closed (selected days) (January, 1 July 4 and November 4)
Start time 7:00, no end time
Group 2
This schedule sets LampSet_1 and LampSet_3 off and LampSet_2 one at 0:00.

Both schedules are enabled.

When the start trigger for schedule "Everyday" is fired a command is placed in a queue to turn on the three lamps. When the start trigger for schedule "Stored closed" is fired it looks in the queue for any commands to each of the three items in the group and replaces the command with the command from this group.

After all the schedules execute the commands queue is executed.

For this example the queue would be:

LampSet_1.Process variable digital start trigger = false
LampSet_2.Process variable digital start trigger = true
LampSet_3.Process variable digital start trigger = false
Execute script XYZ

If the attribute "Non combining" was enabled the queue would be:

LampSet_1.Process variable digital start trigger = true
LampSet_2.Process variable digital start trigger = true
LampSet_3.Process variable digital start trigger = true
Execute script XYZ
LampSet_1.Process variable digital start trigger = false
LampSet_2.Process variable digital start trigger = true

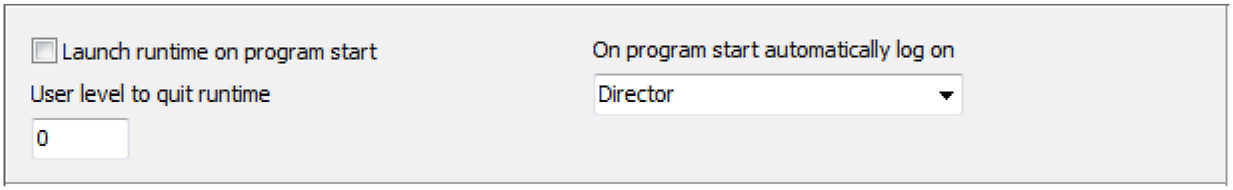
LampSet_3.Process variable digital start trigger = false

Runtime start pulse delay

When runtime starts the program begins issuing commands to read data from the external devices. Depending on the protocol, communication delays, polling rate, etc., it can take several seconds to several minutes for all the external data to be collected and processed at least once. This attribute inhibits the scheduler logic from executing the 'runtime start pulse' until the time delay has elapsed. If the value is 0 the 'runtime start pulse' is not delayed. The range is 0 - 3600 seconds.

SETTINGS

PROGRAM START



☐ Launch runtime on program start

User level to quit runtime

0

On program start automatically log on

Director

Launch runtime on program start

When the main program is started start, runtime monitoring. The runtime monitoring is a separate program and this will launch the program.

If you want the program to start when "Windows" starts, make a shortcut of the " Configure.exe" and place it in the "Startup" directory of windows.

If you then want to start runtime monitoring at startup, enable this option.

NOTE: If this option is enabled and you want to stop the runtime monitoring from beginning, ***immediately*** after the main program is launched, press and hold the "CTRL" key.

On program start automatically log on

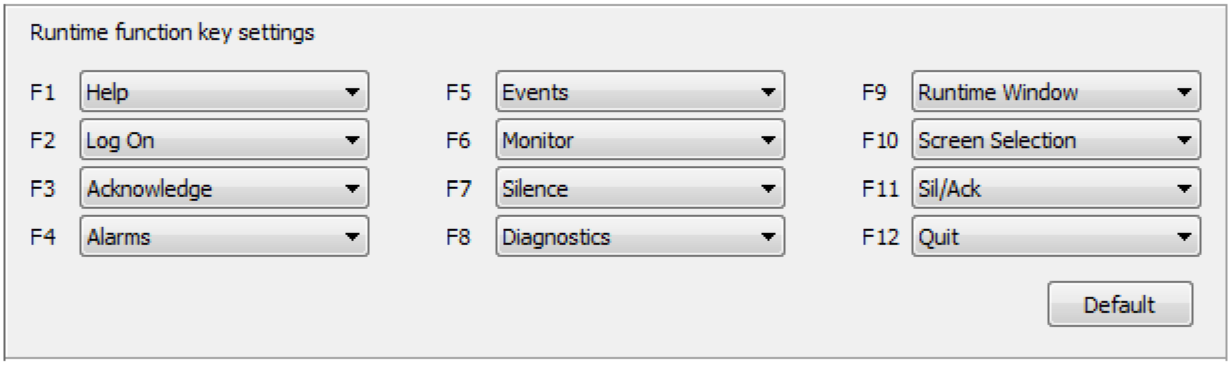
When the program starts you can have a user automatically logged on. If you do not want a user logged on at program start this field must be blank. If the name in the filed is not a valid user name it will be ignored.

This attribute is also applied when a project is opened.

User level to quit runtime

After runtime monitoring has started the logged on user must have a user level equal to or greater than this value to terminate runtime monitoring.

RUNTIME FUNCTION KEY SETTINGS


Runtime function key settings

F1 Help
F2 Log On
F3 Acknowledge
F4 Alarms
F5 Events
F6 Monitor
F7 Silence
F8 Diagnostics
F9 Runtime Window
F10 Screen Selection
F11 Sil/Ack
F12 Quit

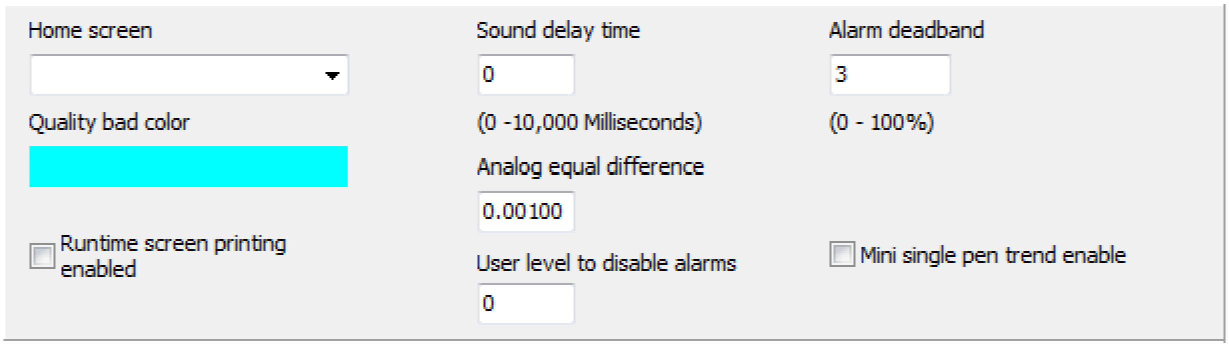
This provides for the remapping of function keys to actions.

The defaults assignments are:

F1 = Help
F2 = Logon
F3 = Acknowledge
F4 = Help
F5 = Events
F6 = Monitor
F7 = Silence
F8 = Diagnostics
F9 = Runtime Window
F10 = Screen Selection
F11 = Silence/Acknowledge
F12 = Quit

When a script editor window is open these function keys are disabled.

MISCELLANEOUS



Home screen

Quality bad color

☐ Runtime screen printing enabled

Sound delay time: 0

(0 -10,000 Milliseconds)

Analog equal difference: 0.00100

User level to disable alarms: 0

Alarm deadband: 3

(0 - 100%)

☐ Mini single pen trend enable

Home screen

When runtime monitoring begins if this field is not blank the program will attempt to open the screen for operation.

Quality bad color

Graphic elements containing animation are connected to data points. Those data points have either a good quality or bad quality. Good quality indicates the connection to the data source is established and active. Bad quality indicates that the connection to the data source has been interrupted or the underlying data point has become unavailable, corrupted, etc..

When the quality is bad the graphic element will be rendered in the color selected. When the quality is good the graphic element will be rendered as it is configured.

Sound delay time

When runtime monitoring is active and a sound is commanded to play, it is placed in a queue. The sounds are played one after another until the end of the queue and then the first sound in the queue is played. As long as the queue contains sounds it continues to play the sounds in a "round robin" method. This value instructs the "sound player" to pause "X" milliseconds between playing each sound.

Example:
Setting is 2000. (2 seconds)
Three sounds are in the queue.

Sound 1 is played
Wait 2 seconds
Sound 2 is played
Wait 2 seconds
Sound 3 is played
Wait 2 seconds
Return to top and begin

Analog equal difference

This value is the maximum difference between two floating point numbers and to be "considered" equal.

All analog values are floating point type. Floating point numbers are represented in binary fractions and therefore are always an approximation of a decimal fraction.

That is why occasionally you see a value like 1.9800000000000001 for something that you would expect to have only a few decimal places of precision. When comparing two floating point numbers, the comparison should be on how close they are to each other rather than testing for equality.

AED = 0.001 (default)
Equal = ((a - b) <= AED)

User level to disable alarms

This is the required user level to disable alarms via the runtime panel "Alarm Enables" button.

Mini single pen trend enable

The "Mini single pen trend" graphic elements display the previous 100 seconds of the point value. If this attribute is enabled, all the points will store the required values. If the project does not contain any "Mini single pen trend" graphic elements, this attribute should **not** be enabled.

Alarm deadband

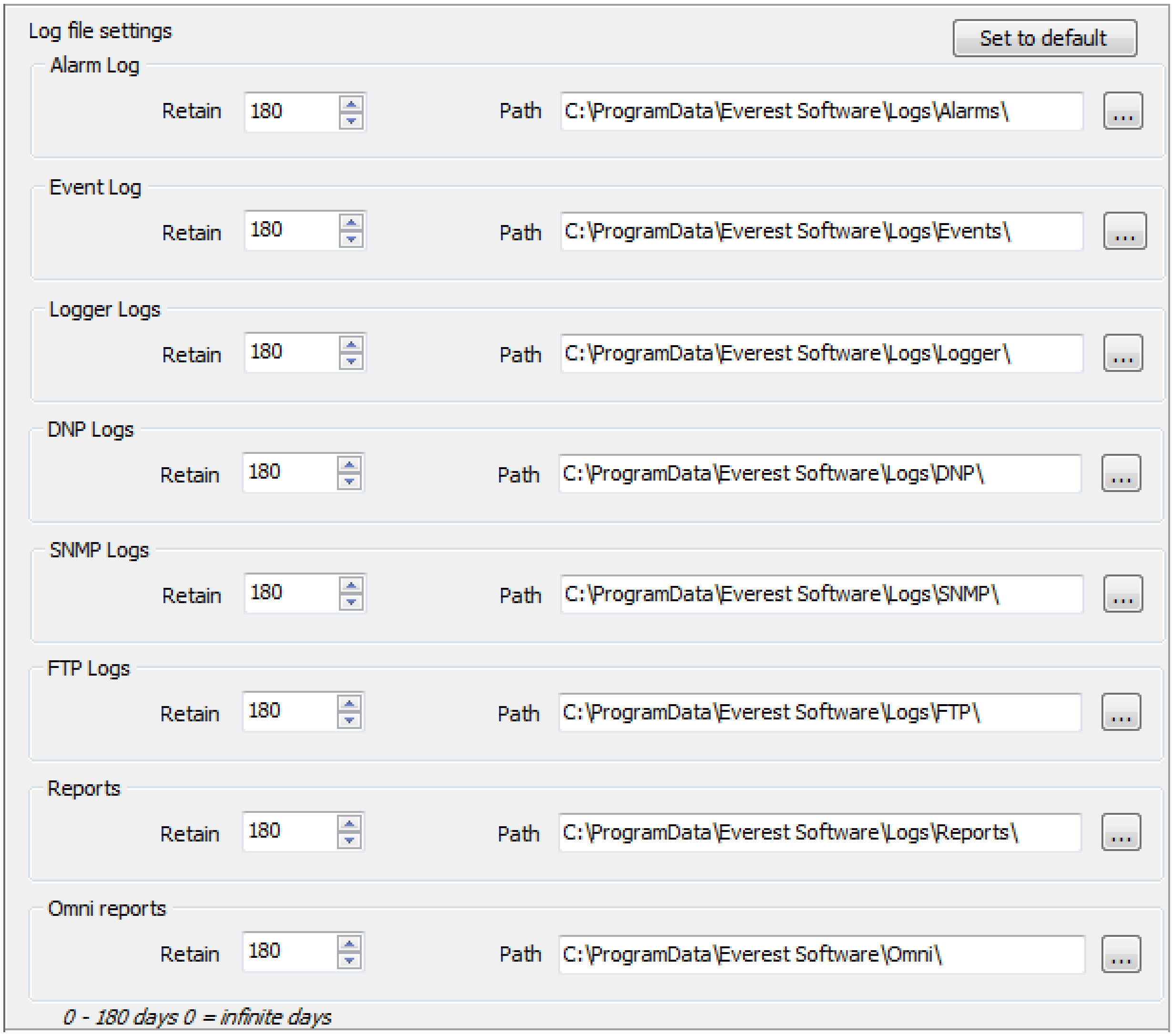
This is the default value applied to alarm deadband settings when a point is created during configuration.

Runtime screen printing enabled

When runtime is active and the user presses the "Print Screen" key a capture of the screen will be created and sent to the configured default printer. On systems with more than one monitor each monitor will be rendered on a separate page. A script command to print the screen is also provided.

Note: If the 'ALT' key is pressed when the "Print Screen" key is pressed or the script command is executed, only the active window will be captured and printed.

Log File Settings



Log file settings

Alarm Log
Retain 180
Path C:\ProgramData\Everest Software\Logs\Alarms\

Event Log
Retain 180
Path C:\ProgramData\Everest Software\Logs\Events\

Logger Logs
Retain 180
Path C:\ProgramData\Everest Software\Logs\Logger\

DNP Logs
Retain 180
Path C:\ProgramData\Everest Software\Logs\DNP\

SNMP Logs
Retain 180
Path C:\ProgramData\Everest Software\Logs\SNMP\

FTP Logs
Retain 180
Path C:\ProgramData\Everest Software\Logs\FTP\

Reports
Retain 180
Path C:\ProgramData\Everest Software\Logs\Reports\

Omni reports
Retain 180
Path C:\ProgramData\Everest Software\Omni\

0 - 180 days 0 = infinite days

All log files are "daily" files. At midnight new files are created for each type (alarm, event, logger, etc.) and the previous days files are closed. When runtime monitoring is started it checks to see if a file is present for the current day. If found it appends any new data to the file. If a file is not found a new file is created.

Omni files are stored in the Omni path. The file name will be the port name, the date, the time and the file extension will be the report type. All reports are in text (single byte ASCII) format. <Omni path>\<port name>~<day>~<time><ext>
Example: Meter1~10-29-2011~14-29-34.snr

Retain

This is the number of days to retain the log files. If the setting is 0 old log files are not deleted. Be aware the destination maybe become full and cause errors.

Example:
Retain = 30
Each day when the new log file is created any files of the same type that are older than 30 days are deleted.
For Omni, this is the directory based.

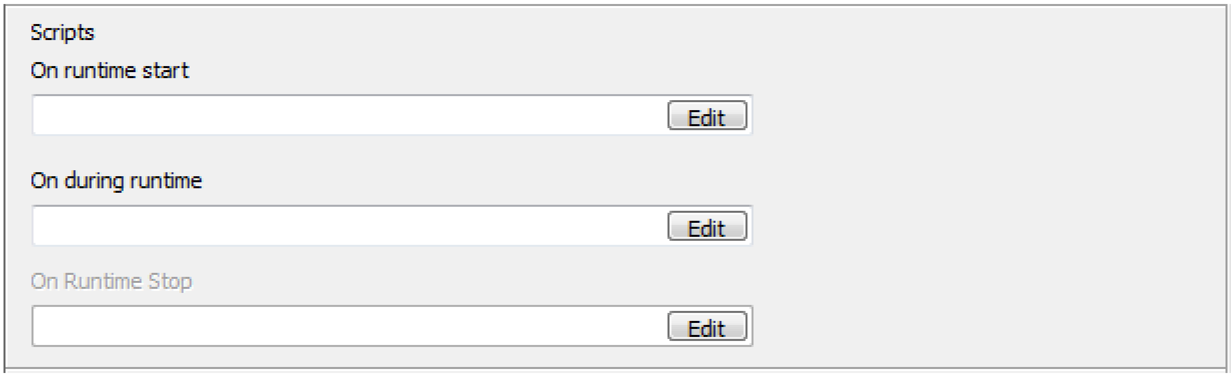
Path

This is the path to store the log files for each type. Each type must have a unique end destination.

Set to default

This sets the path for all the log files to the default destination.

SCRIPTS



On runtime start

The selected, if one is selected, script will execute once when runtime monitoring starts. It executes after all initialization steps and before data request are issued to external devices, before data logging begins and before the home window, if assigned, is opened.

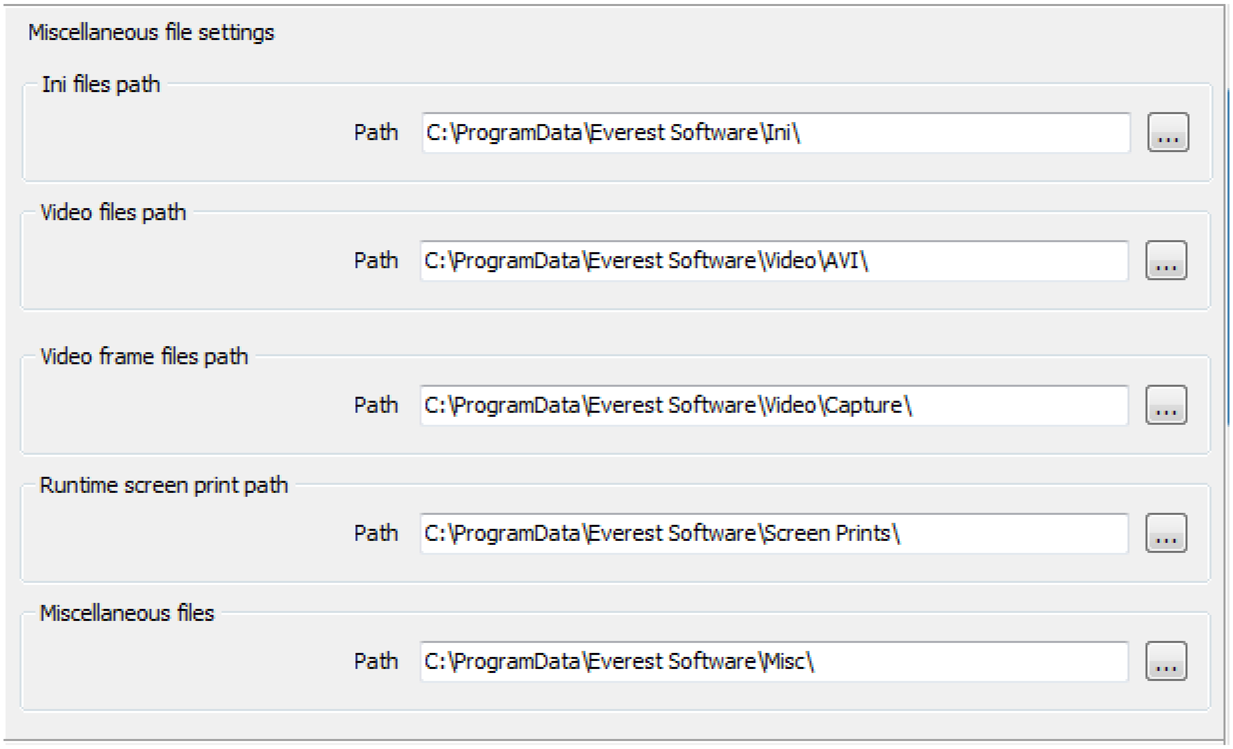
On during runtime

The selected, if one is selected, script will execute while runtime monitoring is active. It will be placed in the queue. For more information see: Scripting help file.

On runtime stop

The selected, if one is selected, script will execute when the command is executed to end runtime monitoring. This setting is disabled.

MISCELLANEOUS FILE SETTINGS



Path C:\ProgramData\Everest Software\Ini\

Path C:\ProgramData\Everest Software\Video\AVI\

Path C:\ProgramData\Everest Software\Video\Capture\

Path C:\ProgramData\Everest Software\Screen Prints\

Path C:\ProgramData\Everest Software\Misc\

Ini Files Path

Several "ini" files are used to store user preferences, window settings, etc.. This is the path to those files.

Video Files Path

This is the path to recorded video files. The file name format is <Configured camera name> ^ <date string> ~ <time string> Example: Camera1^02-27-2007~15-45-34. Day/month/year order per system setting. The time uses the 24 hour format.

Video Frame Files Path

This is the path to captured video frames files. The file name format is <Configured camera name> ^ <date string> ~ <time string> Example: Camera1^02-27-2007~15-45-34. Day/month/year order per system setting. The time uses the 24 hour format.

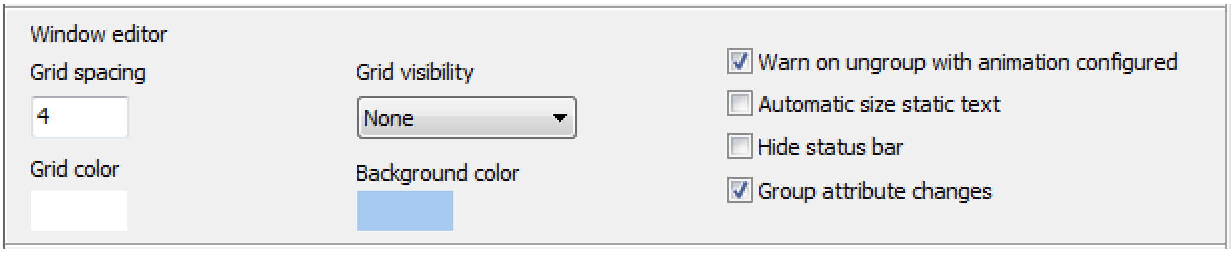
Runtime Screen Print Path

This is the path to captured screen prints files. This directory is normally empty. When a screen print command is initiated the captured screen is saved in a file to this path. The file is then sent to the default configured printer and the file is deleted. At runtime start all the files in this directory are deleted. Do not store files in this directory. Sub directories and files in sub directories are not deleted.

Miscellaneous Files Path

Miscellaneous files that are used to store isolated data

WINDOW EDITOR



Window editor

Grid spacing: 4

Grid visibility: None

Grid color

Background color

☑ Warn on ungroup with animation configured

☐ Automatic size static text

☐ Hide status bar

☑ Group attribute changes

Grid spacing

The default grid spacing in the window editor.

Grid color

The default grid color setting in the window editor.

Grid visibility

The default grid visibility.
Theses settings are the default settings for new windows. The settings for each window are saved with the window. Refer to the graphics configuration help file for more information.

Background color

The editor window can be larger than the user window. For example, the user window can be 800 X 600 and the editor window can be much larger. This creates a blank area in the editor window. This attribute sets the color of the blank area.

Warn on ungroup with animation configured

Grouped graphic elements can be configured for animation. If a grouped graphic element is "ungrouped" the grouped element no longer exists and the animation(s) for the group is lost. The animation for the elements of the group, if configured, are not lost.

Automatic size static text

When an attribute of a text element is changed, if the element does not have any animations, the bounding rectangle will be adjusted to fully enclose the text.
Note: Does not apply to rotated text.

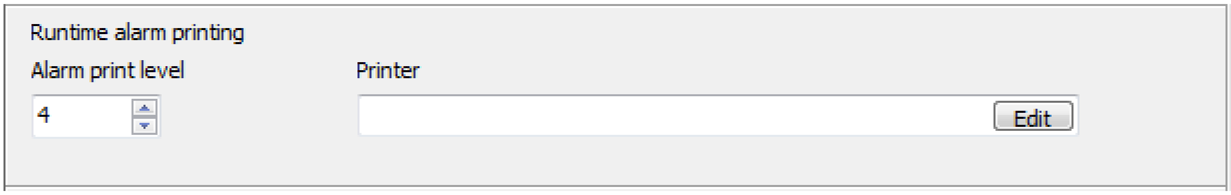
Hide status bar

The bar at the bottom of the graphic editor that displays size, position and selected count for the graphic elements. When enabled the bar will not be displayed.

Group attribute change

A grouped element does not have a color or pen width, etc. If this attribute is enabled, changing the foreground, background or pen color will change the attribute in all the elements of the group that utilize the attribute. The same applies to brush style, pen style and pen width. This does not apply to bitmaps or WMF/EMF. This is for configuration mode. It does not apply to runtime animations.

RUNTIME ALARM PRINTING



Alarm print level: 4

Printer:

Alarm Print Level

This attribute is used to save paper on single sheet printers. Each alarm prints 4 lines. Setting this value to other than zero (0) causes the <count> alarms to be queued for printing.

Example: Setting this value to 0, each alarm prints as is determined.

Example: Setting this value to 3, each alarm is queued until 3 alarms are in the queue, then the alarms are printed.

If the selected printer is a single sheet printer and this setting is 0, each alarm would be printed on a separate page.

Printer

Select the name of the printer for runtime alarm printing. If the project is created on one computer and run on another computer, verify the correct printer is selected. If the names do not match alarm printing will be disabled. To disable runtime alarm printing, erase this field.

Print Format

Line 1:Tagname and right aligned date and time
Line 2: Condition status ":" value at alarm time
or
Line 2: Normal status "-" Condition status
Line 3: Point description
Line 4: Blank

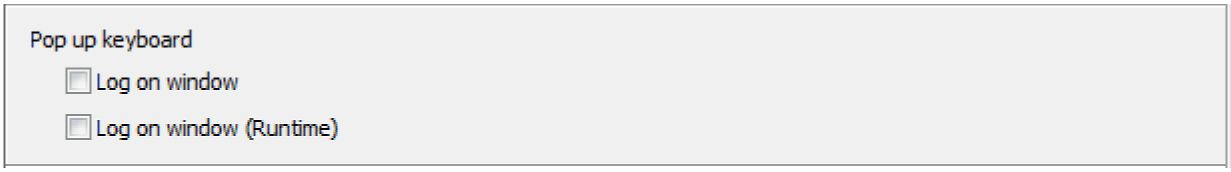
Example:

```
Tower_1_Temperature_4                          7/4/2007 10:51:12 AM
Hi Temperature : 562.34
Temperature probe level 4

Tower_1_Temperature_4                          7/4/2007 10:52:45 AM
Hi Hi Temperature : 582.10
Temperature probe level 4
```

Tower_1_Temperature_4 Normal - Hi Hi Temperature Temperature probe level 4	7/4/2007 11:15:00 AM
Tower_1_Temperature_4 Normal - Hi Temperature Temperature probe level 4	7/4/2007 11:20:37 AM

POP UP KEYBOARD



Pop up keyboard

☐ Log on window

☐ Log on window (Runtime)

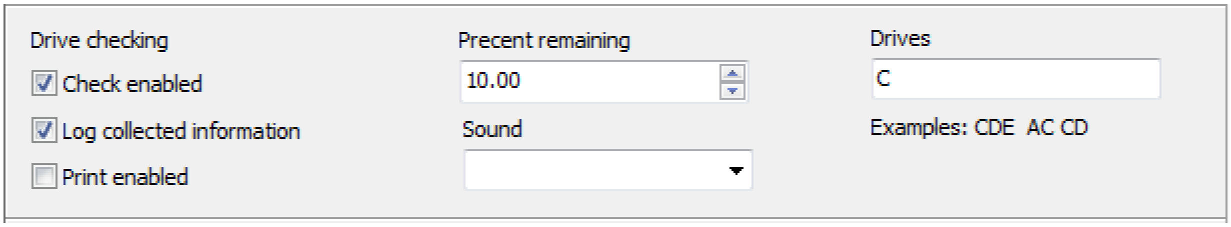
Log on window

If enabled the on screen virtual keyboard will be displayed when the log on window is displayed.

Log on window (Runtime)

If enabled the on screen virtual keyboard will be displayed when the log on window is displayed, at runtime.

DRIVE CHECKING



Drive checking

☑ Check enabled

☑ Log collected information

☐ Print enabled

Precent remaining: 10.00

Sound:

Drives: C

Examples: CDE AC CD

Check enabled

If enabled the runtime program will check the drive capacity once per day at midnight.

Log collected information

If enabled when the runtime program checks the drive the information collected from the drive will be logged to the event log. The format in the log file is one line per drive. The values are separated by a comma. The fields are:
Drive, Ready, Low Space, Total Space, Free Space, Used Space, Percent Free, Percent Used

Example:
C,True, False, 465.74 GB, 386.73 GB, 79.01 GB, 83.04%, 16.96%

Print enabled

If this is enabled and an alarm printer is configured, when a low percent remaining condition for a drive is detected, a message will be printed.

Percent remaining

If the amount of free space is below X percent of the drive total space an entry will be added to the event log. If the sound setting is configured the sound will be queued for playing.

Sound

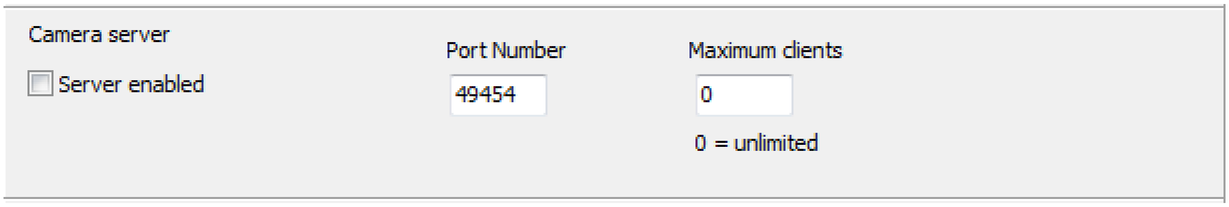
Select the sound to play when the drive free space is below the threshold.

Drives

Enter the drive letters to be examined. The allowable drive letters are A-Z. Via scripting the drive capacity can be viewed. This setting is used for the checking of the drive capacity and the information displayed in the window.

Note: If the drive is not ready, e.g. drive has been removed, power is off, etc., the check will only log that the drive is not ready and will not play a sound.

VIDEO SERVER


Camera server

☐ Server enabled

Port Number: 49454

Maximum clients: 0

0 = unlimited

When an HMI is collecting images from an IP camera the images can be published. Enabling this checkbox allows a remote HMI to request camera images.

Server enabled

This checkbox must be checked for the server to be active at runtime.

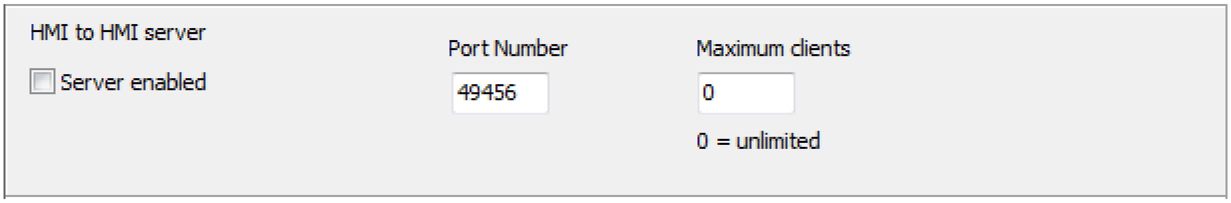
Port number

The TCP/IP port number the port is to use. 49454 is the default.

Maximum clients

The maximum number of client connections. 0 = unlimited and is the default.

HMI TO HMI SERVER


HMI to HMI server

☐ Server enabled

Port Number: 49456

Maximum clients: 0

0 = unlimited

The points of this HMI can be published for use by remote HMIs. Enabling this checkbox allows a remote HMI to read/write the points.

Server enabled

This checkbox must be checked for the server to be active at runtime.

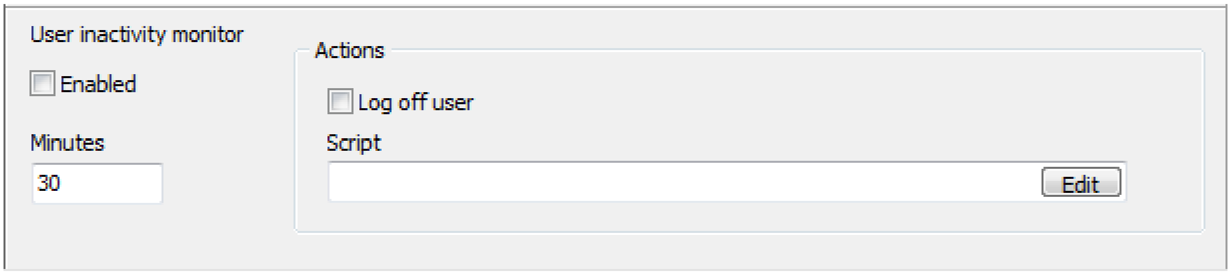
Port number

The TCP/IP port number the port is to use. 49456 is the default.

Maximum clients

The maximum number of client connections. 0 = unlimited and is the default.

USER INACTIVITY MONITOR


User inactivity monitor
☐ Enabled
Minutes
30
Actions
☐ Log off user
Script
Edit

This is used to monitor if the user is interacting with the HMI and if not then perform some action.

Enabled

This checkbox must be enabled for the monitor to be active at runtime.

Minutes

If the mouse position is not changed for X minutes the user is considered inactive. Mouse position has a deadband of +-5 pixels. The time is checked at each new minute.

Log off user

If enabled, the user will be logged off.

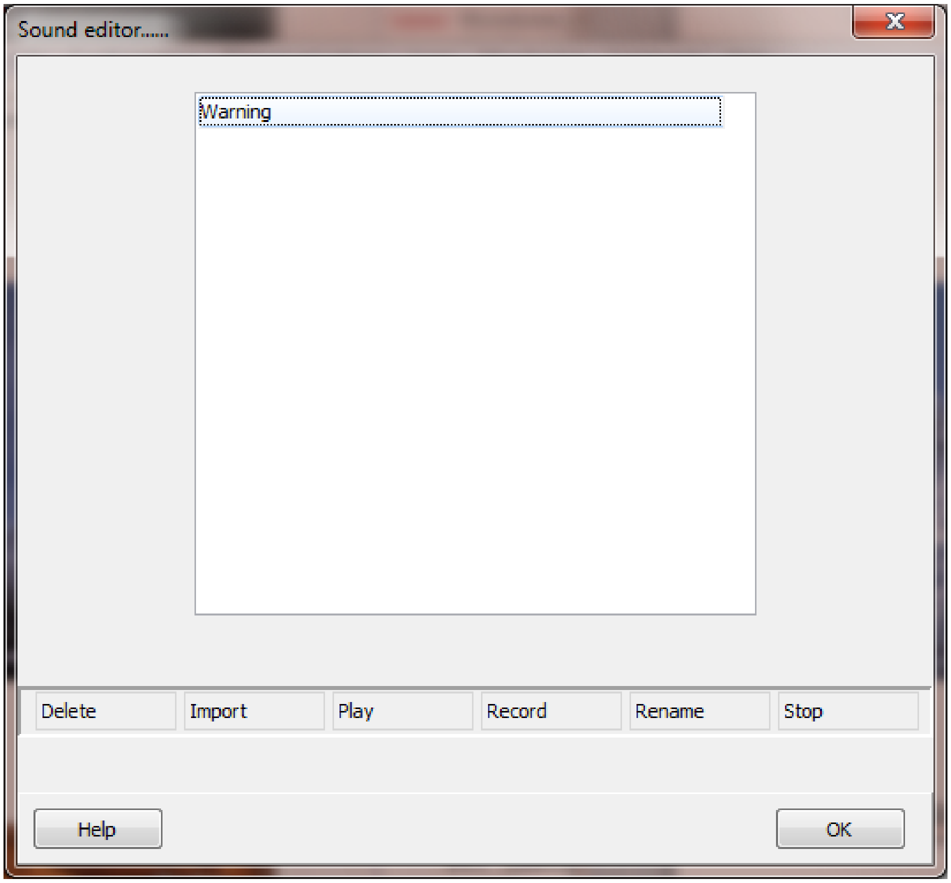
Note:
1) If you need other actions to take place when the log off occurs, use a task.

Queue script

If a script is selected it will be queued to execute.

SOUNDS

Sounds can be queued to play when an alarm transitions to true, by script command, etc.


Sound editor......
Warning
Delete
Import
Play
Record
Rename
Stop
Help
OK

DELETE

Delete the selected sound.

IMPORT

This provides a method to import a "WAV" file.

PLAY

Select a sound or sound and select the play button. All the selected sounds will play.

RECORD

After selecting a request for a sound name dialog will appear. Duplicate sound names are not allowed. After the "OK" button is selected and the name is allowed recording will begin. Recording will not stop until the "Stop" button is selected.

RENAME

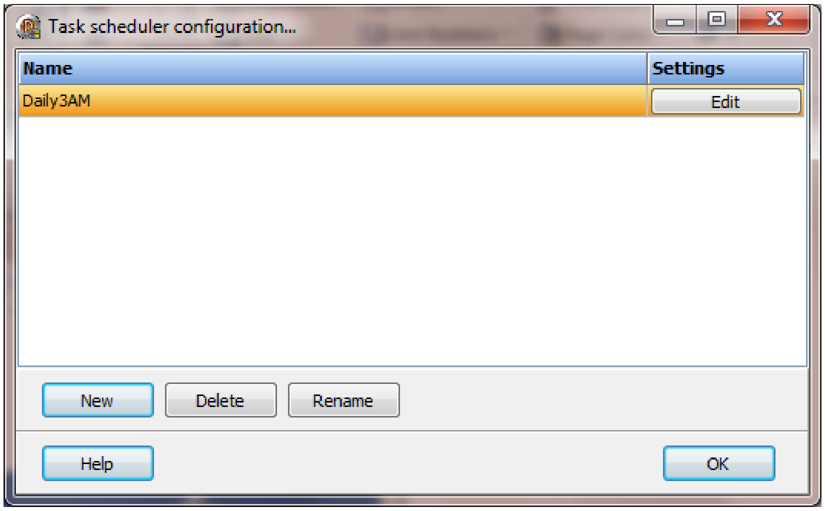
Select this to rename the selected file.

STOP

Select this to stop recording. Also, if several sounds have been selected for playing, selecting this button will stop playing the sounds after the current sound is finished.

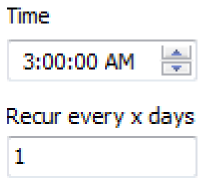
TASK SCHEDULER

Each task scheduler object is listed in the window. A is a command to the runtime application to take some action.


Task scheduler configuration...

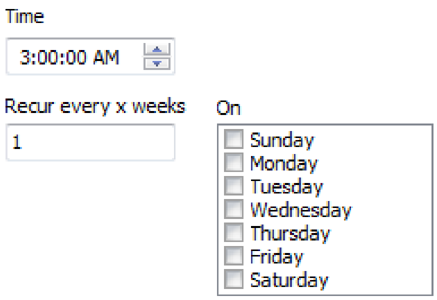
Name	Settings
Daily3AM	Edit

Daily


Time: 3:00:00 AM

Recur every x days: 1

Weekly

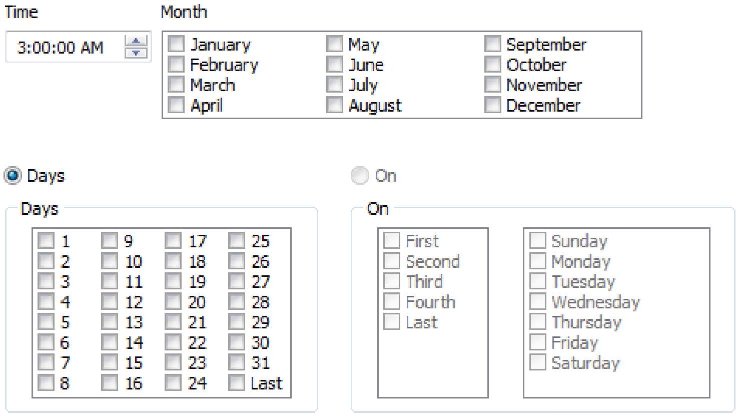

Time: 3:00:00 AM

Recur every x weeks: 1

On

☐ Sunday
☐ Monday
☐ Tuesday
☐ Wednesday
☐ Thursday
☐ Friday
☐ Saturday

Monthly



Time: 3:00:00 AM

Month

☐ January
☐ February
☐ March
☐ April
☐ May
☐ June
☐ July
☐ August
☐ September
☐ October
☐ November
☐ December

● Days ○ On

Days

☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ 8
☐ 9
☐ 10
☐ 11
☐ 12
☐ 13
☐ 14
☐ 15
☐ 16
☐ 17
☐ 18
☐ 19
☐ 20
☐ 21
☐ 22
☐ 23
☐ 24
☐ 25
☐ 26
☐ 27
☐ 28
☐ 29
☐ 30
☐ 31
☐ Last

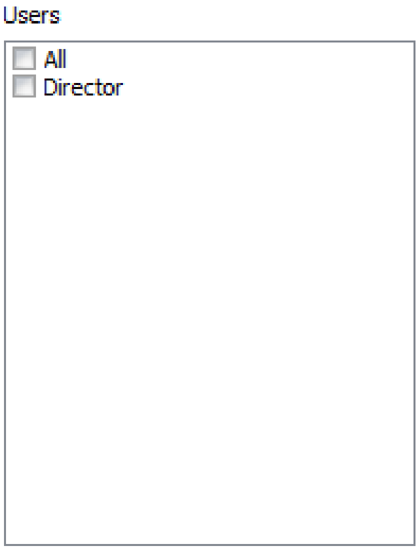
On

☐ First
☐ Second
☐ Third
☐ Fourth
☐ Last

☐ Sunday
☐ Monday
☐ Tuesday
☐ Wednesday
☐ Thursday
☐ Friday
☐ Saturday

When runtime starts

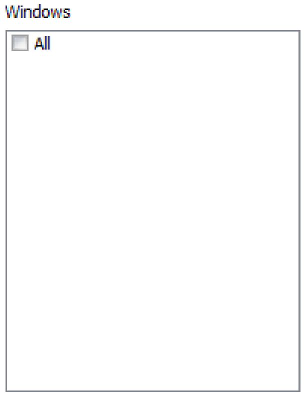
When a user logs in or out



Users

☐ All
☐ Director

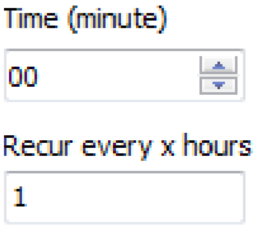
When a window is opened or closed



Windows

☐ All

Hourly



Time (minute)

00

Recur every x hours

1

TRIGGER

This is the event that is used to trigger the actions.

ENABLED

If enabled the task will be active at runtime. This setting is also modifiable via scripting. An object can be enabled but never execute due to configuration settings. For example, a monthly trigger could configured with the 'Days' set to '31'. Only those months with 31 days would trigger a task on the 31st day of the month. Or, a 'Daily' trigger is set and runtime starts after the time setting.

SHOW

When the task is time based selecting the show button will display the next time the task would run in runtime.

TIME

Some tasks are time based. This is the time to execute the actions configured. The seconds field is ignored.

RECUR EVERY X DAYS

The actions may execute again. 1 would be every day, 2 would be every two days, etc.
0 = The actions will execute once on the day runtime starts.

-1 = If the design is to only execute at X time and runtime starts after the time settings, a value of -1 instructs the program to execute the actions now. "When runtime starts" might be a better trigger.

-2 = If the design is to only execute at X time and runtime starts after the time settings, a value of -2 instructs the program to execute the actions the next day at the X time setting. "When runtime starts" might be a better trigger.
Note: If runtime starts, stops and starts again the task might trigger. If that causes a problem shift to scripting. If you need help contact technical support.

RECUR EVERY X WEEKS

The actions may execute again. 1 would be every week, 2 would be every two weeks, etc.

RECUR EVERY X HOURS

The actions may execute again. 1 would be every hour, 2 would be every two hours, etc. If the minutes of the hour have passed when runtime starts the task will execute at the ”recur” hour.

WEEKLY – ON

The day or days of the week the task is to execute.

MONTH

The month or months the task is to execute.

MONTHLY - DAYS

The day or days of the week for the task to execute.
Last - If selected the task will execute on the last day of the selected months regardless of the number of days in the month.

MONTHLY - ON

On - The week or weeks the task is to execute and the day of the week.

Last - If selected the task will execute on the last day of the days selected.

WHEN RUNTIME STARTS

The task will execute each time the runtime program begins operations.

WHEN A USER LOGS IN / LOGS OUT

The task will execute each time the named user logs in/out.
All - The task will execute each time any user logs in/out.

WHEN A WINDOW IS OPENED / CLOSED

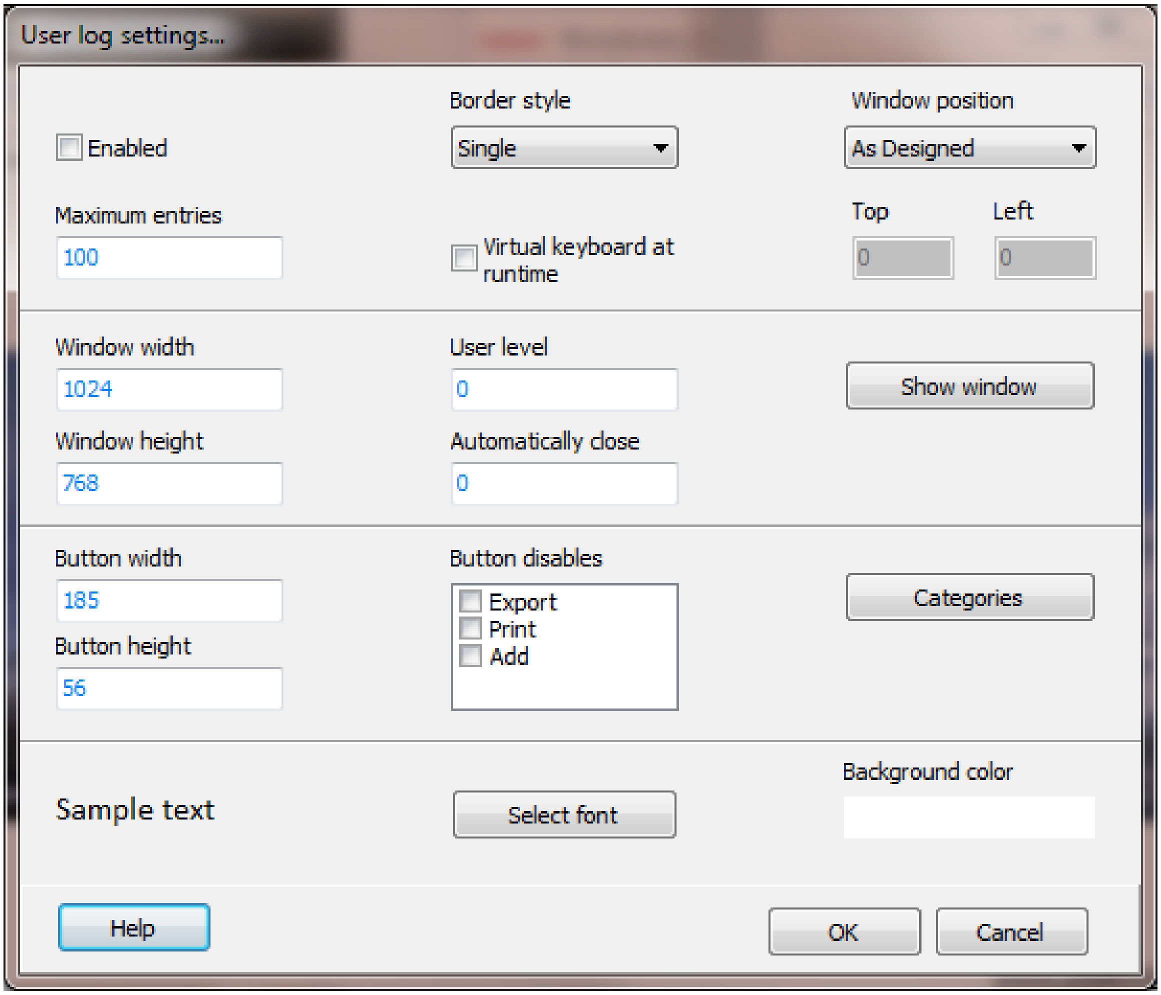
The task will execute each time the named window is opened/closed.
All - The task will execute each time any user window is opened/closed.

ACTIONS

The actions to perform when the task is executed. See the mouse commands for a list of possible actions.

USER LOGS

The user logs provide a method for online operations to enter data into a log.


User log settings...

☐ Enabled

Border style: Single

Window position: As Designed

Maximum entries: 100

☐ Virtual keyboard at runtime

Top: 0

Left: 0

Window width: 1024

Window height: 768

User level: 0

Automatically close: 0

Button width: 185

Button height: 56

Button disables:
☐ Export
☐ Print
☐ Add

Sample text

Background color

Enabled

This enables or disables runtime user logging.

Border Style

Microsoft Windows provides for several window border styles. None, single, sizable and dialog. These styles can be viewed by selecting the "Show Window" button in the middle of the screen.

Virtual keyboard at runtime

The virtual key will be displayed below the text field when adding a log entry.

Window Position

Select the position to open the window. 'As designed' is the same as 'Top Center'.

Window width/height

This size of the window, including any border and title bar.

Show Window

View the window with the selected settings. When the window is visible, click the mouse button to close the window. Note: The size of the window is limited to the monitor size.

User Level

At runtime the logged on user must have at least the level entered to make additions to the user log. Any logged on user can view the user logs.

Automatically close

The number of seconds the window will be open. If the value is 0 the window will not automatically close. Note: This is for the log viewing window only.

Button width/height

This is the button on the right side of the window.

Button disables

Each button can be disabled and will not be displayed in the button area. Note: The 'Add' button might be visible but disabled based on the 'User level' setting above.

Categories (optional)

Each log entry can be assigned to a category. If no categories are defined the 'Categories' button will not be visible. When categories are used, only those log entries for the selected category are displayed. Use the 'Categories' button to select the category.

Select font

The font to use in the log text field.

Background color

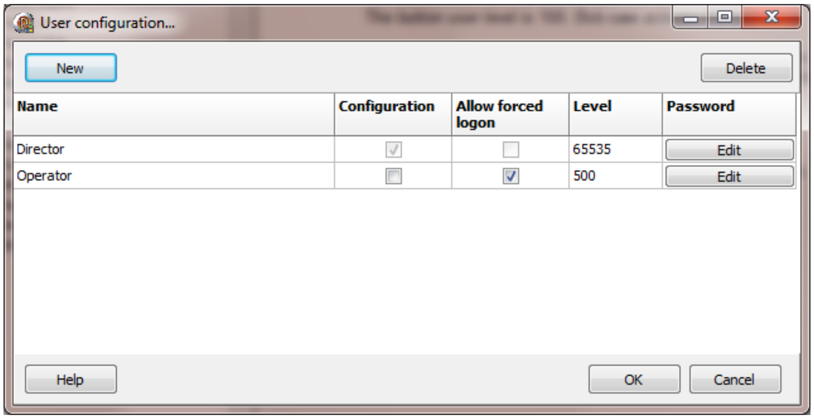
The background color of the log text field.

Maximum entries

The maximum number of entries, total for all categories. When the limit is reached and a new entry is added, the oldest entry will be deleted. The maximum limit is 1000.

USERS

The "Director" user is always present. The level is fixed at 65535 and the "Configuration" is always enabled. For new projects the password is blank (no password assigned).



Name	Configuration	Allow forced logon	Level	Password
Director	☑	☐	65535	Edit
Operator	☐	☑	500	Edit

Name

The name of this user.

Configuration

Enable this checkbox to allow the user to configure the selected project.

Allow forced logon

Enable this checkbox to allow this user to be logged on without the user entering a password via a mouse command or script command.

Level

During runtime monitoring the user created buttons, and most other buttons, are assigned a user level to allow the logged on user with a certain level to activate the button or not activate the button. The levels are 0 - 65335. A user at "X" level can activate all buttons at "X" level and all lesser levels.

Example:
Bob is logged on. Bob's user level is 100.

The button user level is 0. Bob **can** activate the button.
The button user level is 100. Bob **can** activate the button.

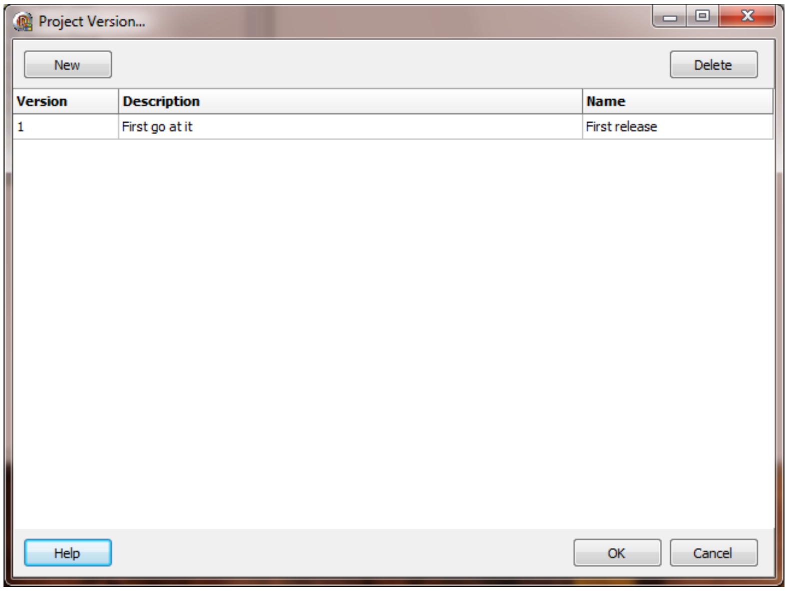
The button user level is 101. Bob **cannot** activate the button.
The button user level is 65535. Bob **cannot** activate the button.

Password

Enter the password for the user. The password can be blank. A unique password is not required for each user.

VERSION

This provides a method to assign a version value, name and description to the project. The fields are strings and any data, limited to 255 characters, is permissible. The value in the "Version" column of the last line is shown on the main window at the "Version:" location.



Version	Description	Name
1	First go at it	First release

Version

The version of the project.

Description

Normally, a brief description of the version. e.g. As Released, As Built, As Commissioned, Added point EG-101, etc..

Name

Normally the name of the user creating the version.

VIDEO

The HMI provides three methods to connect to video cameras or video encoders to display the image in a window, detection motion (IP cameras), record the video and capture snapshots of the image.

Warnings: Recording video can consume large amounts of disk space in a short amount of time.
Some VFW (video for windows) drivers are known to not function correctly with the Windows OS screen saver. If VFW is used verify the Windows OS screen saver is disabled.

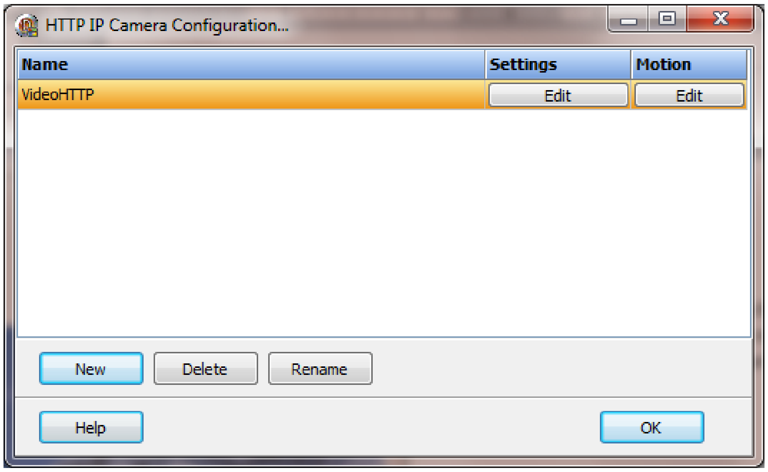
Each video must have a unique tagname assigned.

VFW: The same camera can be referenced more than once but live images can only be accessed in one graphic element at a time. If the same camera is referenced in an open window or windows more than once an error will occur requiring restart of the computer.

HTTP/RTSP IP Video: There is not a restriction on the display of images in windows. Displaying the camera image in more than one window will not cause an error.

HTTP VIDEO

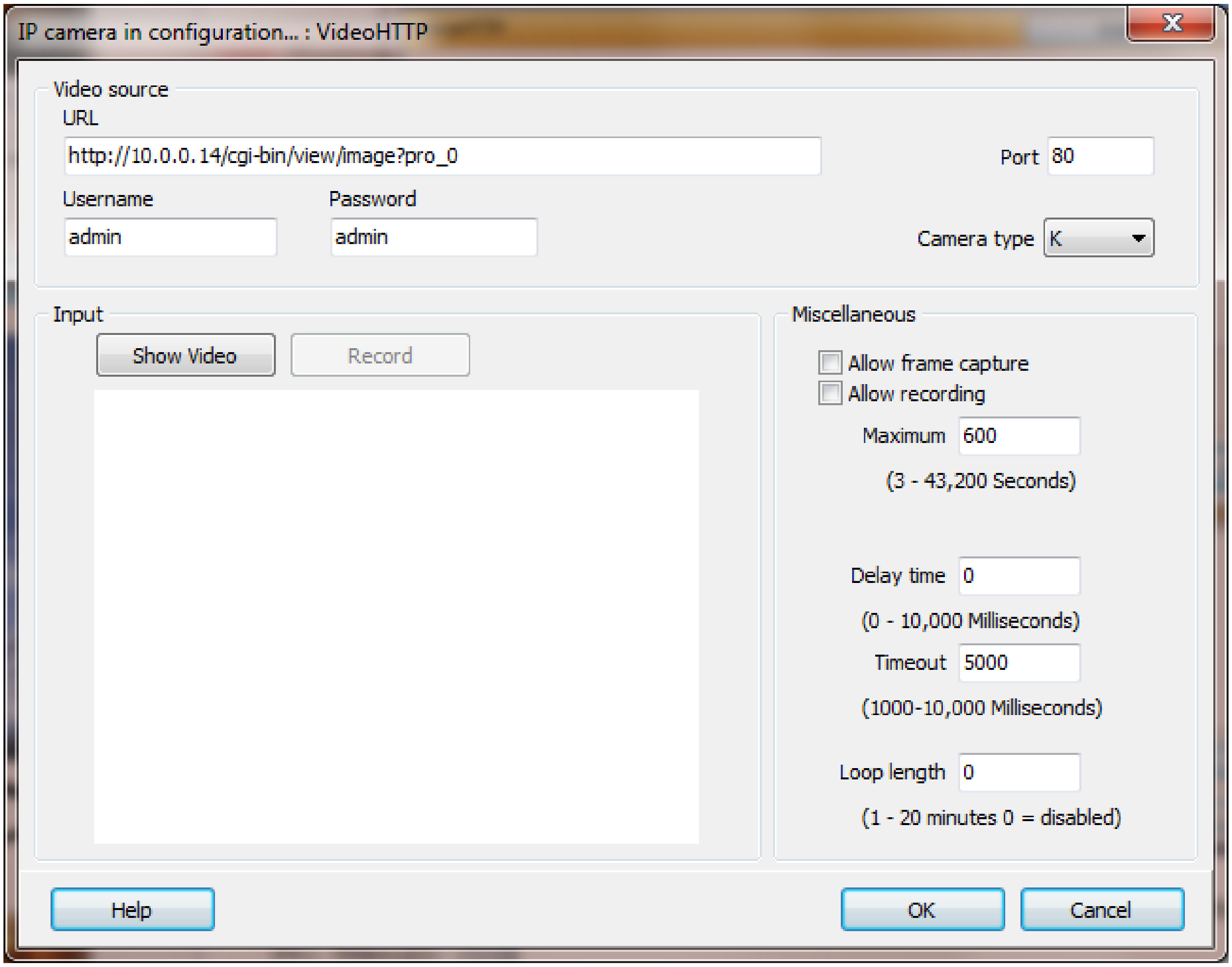
The HTTP protocol is used to access the camera video feed.



Name	Settings	Motion
VideoHTTP	Edit	Edit

Multiple cameras/video encoders can be accessed concurrently.

SETTINGS



IP camera in configuration... : VideoHTTP

Video source

URL http://10.0.0.14/cgi-bin/view/image?pro_0

Port 80

Username admin

Password admin

Camera type K

Input

Miscellaneous

☐ Allow frame capture

☐ Allow recording

Maximum 600

(3 - 43,200 Seconds)

Delay time 0

(0 - 10,000 Milliseconds)

Timeout 5000

(1000-10,000 Milliseconds)

Loop length 0

(1 - 20 minutes 0 = disabled)

Video Source

URL

The complete path to the camera/encoder including the HTTP "Get" text or other text.

Port

The TCP/IP port number. HTTP default is 80. RTSP default is 554.

Username/Password

The user name and password for camera/encoder requiring authentication.

Type

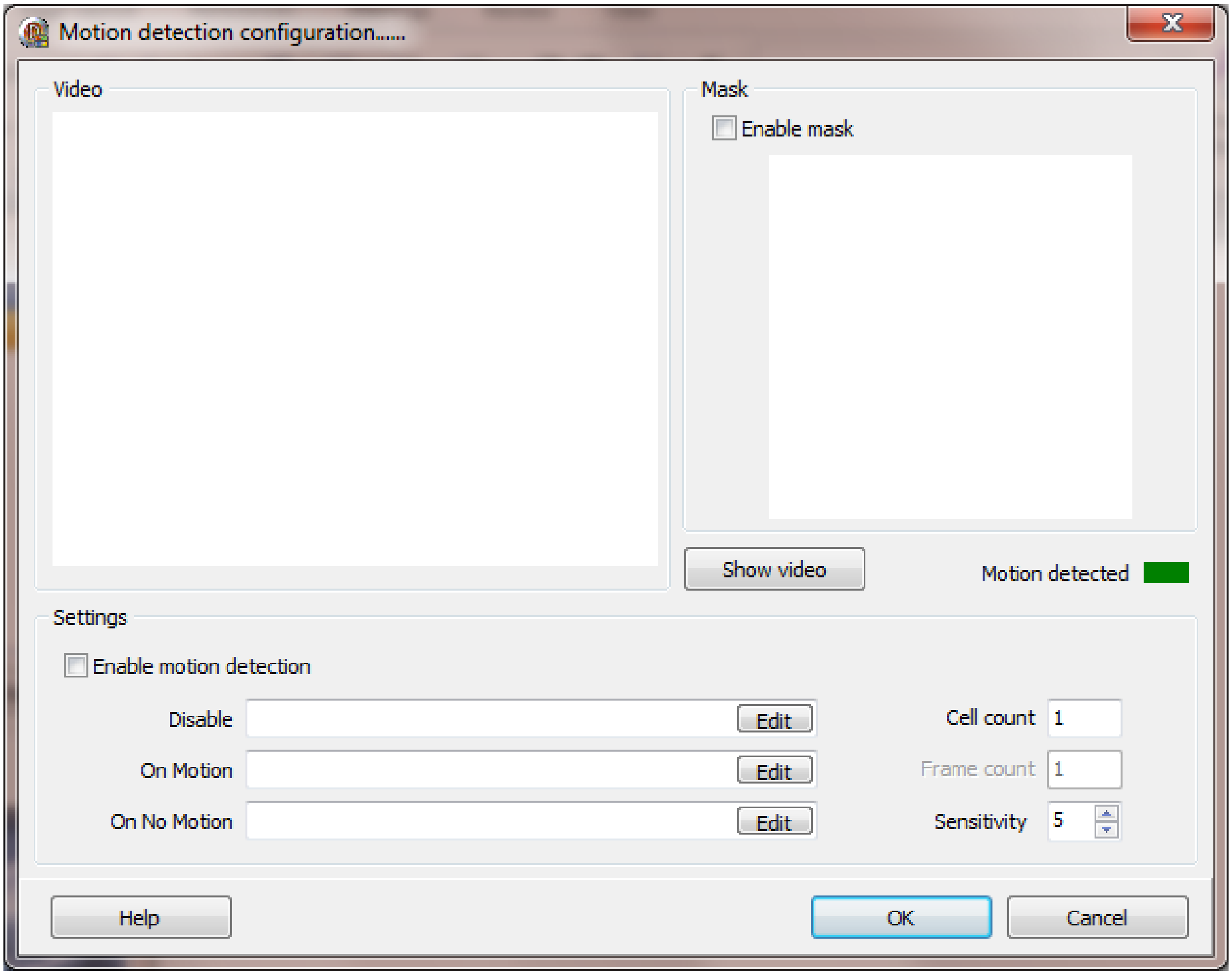
A: SkyIPCam 310 (GET)
B: Moxa VPort 351 Industrial Video Encoder (MJPEG)
C: Axis 241Q Video Server (GET) (Default user: root Default password: h)
D: SkyIPCam 250 (MJPEG)
E: Axis 241Q Video Server (MJPEG) (Default user: root Default password: h)
F: Moxa VPort 2141 Industrial Video Encoder (MJPEG) Note: It appears most of the possible settings are ignored when embedded in the request string. Be sure to set and save the settings using the Moxa interface. For example, the default frame rate is 30fps. This might be too high for the application. 10fps is normally a good frame rate.
G: Refers to camera in a remote HMI. The URL format is the name or IP address followed by the camera/port name. e.g. 192.168.1.1.Camera2
H: Moxa VPort 254 Industrial Video Encoder (MJPEG)
I: Trendnet TV-IP600 (MJPEG) (Default user: admin Default password: admin) This camera uses 'Basic' authentication.
J: Moxa VPort 364A Industrial Video Encoder (MJPEG)
K: Generic (MJPEG) This driver searches the stream for the JPEG image begin marker and end marker to determine a frame. Any content-length field is ignored. This is the recommend driver for all MJPEG applications.

Example URL

1) Zavio camera using profile 3: http://<ip address>/stream?uri=video.pro3

The remaining settings are below under “Common Settings”.

MOTION


Motion detection configuration......
Video
Mask
Show video
Motion detected 🟩
Settings
Edit
Edit
Edit
Help
OK
Cancel

☐ Enable mask

☐ Enable motion detection

Disable

On Motion

On No Motion

Cell count 1

Frame count 1

Sensitivity 5

Notes:
1. Changing any setting while the video is displayed will not take effect until the video is stopped and restarted.
2. When the collection of images begins the motion detection code waits 1.5 seconds for the image to stabilize before motion detection logic executes. If RTSP is used the logic waits for the first frame to be received. Then the logic executes approximately every 100 milliseconds. If the watchdog timer triggers the detection code is reset and the initial wait logic executes.

Enable motion detection

If enabled the motion detection code will execute at runtime. The code will execute regardless of the display of the camera/encoder image.

Disable (optional)

A tagname/item id used to disable the motion detection OnMotion and OnNoMotion commands at runtime.

On Motion, On No Motion

Select a script to execute when motion and/or no motion is detected. These commands are edge triggered.

Cell count

The camera/encoder image is divided into a grid of 32 columns and 32 rows. This is the number of cells that must detect motion before the "On Motion" scripts executes.

Frame count

Not used at this time.

Sensitivity

This value determines the amount of change in a cell required for the cell "changed" state to be set. Higher values are more sensitive.

Mask

The mask is a grid used to disable a cell from inclusion in the "motion" calculation. The grid is 32 * 32 and the black cells are not examined in the motion calculation.

Enable mask

If enabled the mask is incorporated in the motion detection code.

Show video

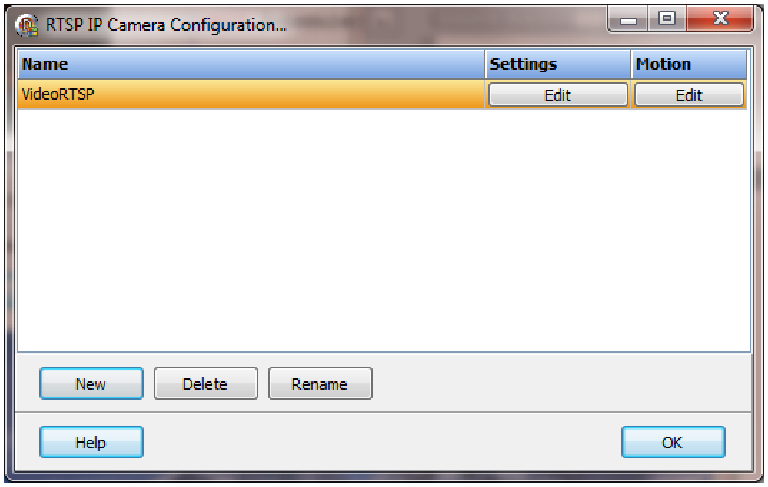
Select this button to display the video image and to use the current settings to detect motion. The "Enable Motion Detection" checkbox must be enabled for the motion detection code to execute.

Motion detected

When video is displayed and the "Enable Motion Detection" checkbox is checked, the rectangle will be green when no motion is detected and red when motion is detected.

RTSP VIDEO

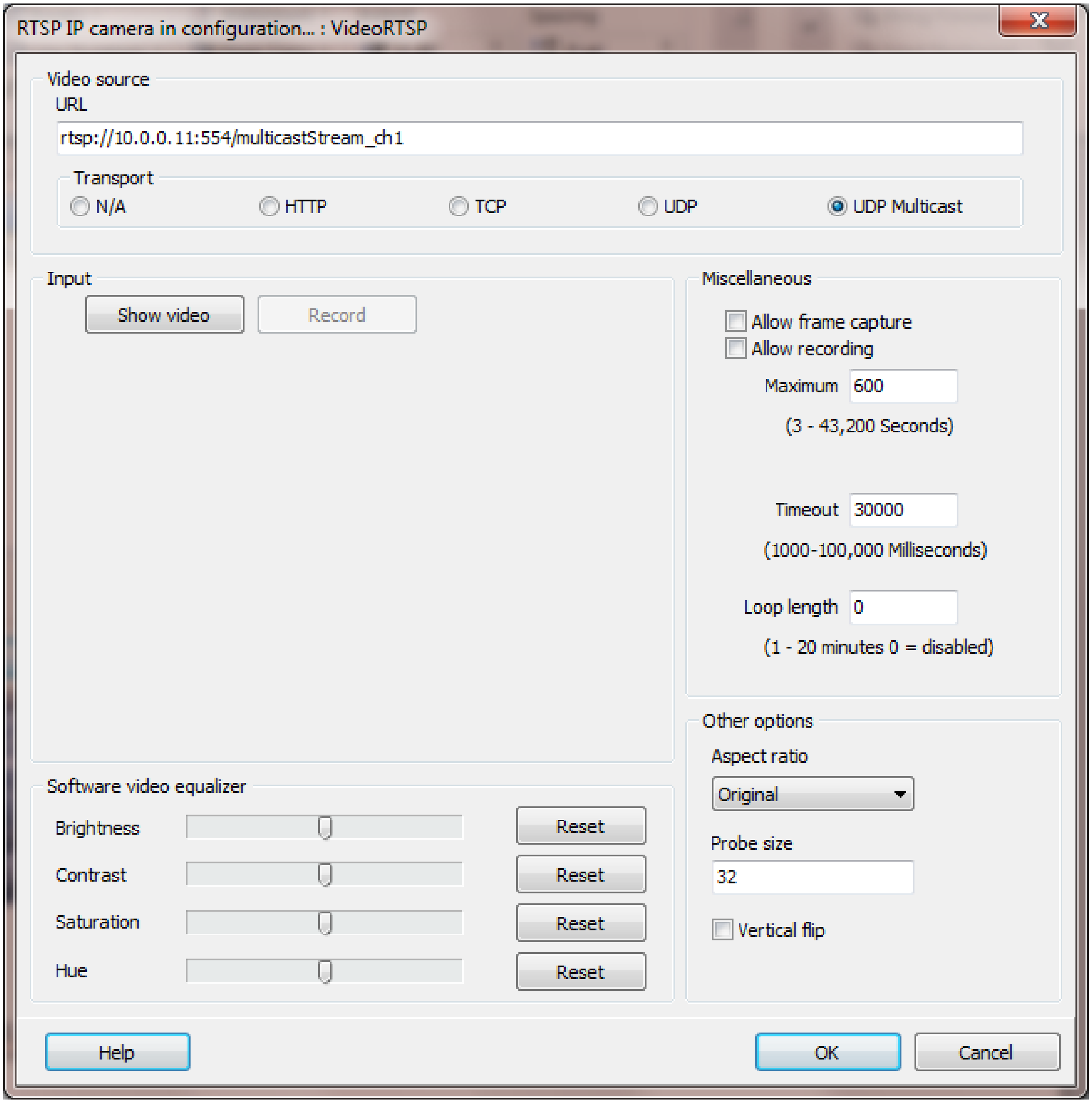
The RTSP protocol is used to access the camera/encoder video feed.


RTSP IP Camera Configuration...
Name
Settings
Motion
Edit
Edit
New
Delete
Rename
Help
OK

Name	Settings	Motion
VideoRTSP	Edit	Edit

Multiple cameras/encoders can be accessed concurrently.

SETTINGS



RTSP IP camera in configuration... : VideoRTSP

Video source

URL: rtsp://10.0.0.11:554/multicastStream_ch1

Transport: ○ N/A ○ HTTP ○ TCP ○ UDP ● UDP Multicast

Miscellaneous

☐ Allow frame capture

☐ Allow recording

Maximum 600

(3 - 43,200 Seconds)

Timeout 30000

(1000-100,000 Milliseconds)

Loop length 0

(1 - 20 minutes 0 = disabled)

Other options

Aspect ratio: Original

Probe size: 32

☐ Vertical flip

Input
Show video
Record
Software video equalizer
Brightness
Contrast
Saturation
Hue
Reset
Reset
Reset
Reset
Help
OK
Cancel

Warnings:
1) Recording video can consume large amounts of disk space in a short amount of time.
2) Connecting to an RTSP camera/encoder across the internet can take many seconds, up to a minute.
3) The loss of a camera/encoder video feed, i.e. power failure, router failure, etc., can take several minutes to detect and can take several minutes to recover after the cause of the failure is corrected.

Each camera/encoder must have a unique tagname assigned.

Video Source

URL

The complete path to the camera/encoder including the RTSP command, port number and any other required text, e.g. user name, password, etc.. The order and format of the URL fields is device specific. Refer to the camera/encoder documentation. The examples have the "generally" accepted format and order.

Examples:

This was for a MOXA 364A video encoder.
Transport = UDP Multicast
Channel 1, port number 554
rtsp://10.0.0.11:554/multicastStream_ch1

This was for a IPC-HFW3200C video camera.
Transport = TCP
A required user name and password, channel 1, port number 554.
rtsp://<user name>:<password>@10.0.5.89:554/cam/realmonitor?channel=1&subtype=0

This was for a NCM-620W video camera.
Transport = N/A, TCP or UDP
A required user name and password, channel 11, port number 554. **admin:123456** are the factory default user and password
rtsp://admin:123456@10.0.0.100:554/11

This was for a Zavio D3100 video camera.
Transport = N/A, TCP or UDP
The user name and password are disabled, video profile 1, port number 554.
rtsp://10.0.0.14:554/video.pro1

Transport

Select the required transport mode.

Mode
N/A
HTTP
TCP
UDP
UDP Multicast

Probe size

Select the probe size. See notes.

Notes:

1) The program buffers frames and RTSP uses a "sync" frame. The sync frame is inserted in the data stream at, for example, every 250 frames. This can cause latency when the program first connects to the device and a delay in displaying frames. Using the "Probe size" can shorten the delay but not eliminate the delay. The latency during connection can be 1 - 15 seconds or more and frame display can be 1- 6 seconds or more. Because of the initial connection latency do not set the timeout too low or the connection will never establish. Using the "Show video" button in the configuration window; test the connection several times to determine the latency. Then double the value for the timeout setting.

The remaining settings are below under “Common Settings”.

MOTION

The motion settings for the RTSP video feed are the same as the HTTP video feed discussed above.

Input

This provides for testing the camera/encoder settings.

Video for Windows only:
The video size is the size the camera is reporting. The image from the camera is scaled to show in the image area.

Show Video

Select this button to attempt a connection to the camera/encoder and display the camera/encoder image. Select this button to disconnect from the camera/encoder. When the video is show in the top left corner is displayed three numbers. Frame counter: Milliseconds between frames: Lowest milliseconds between frames. The frame counter will reset to 0 on a watchdog timeout (1 second)

Warning: If the video input device is not connected and properly functioning selecting this button may cause the program to respond very slowly. If this occurs press and hold the left mouse button on the "show video" button until the program responds.

Miscellaneous

Via the camera/encoder graphic element configuration the user can be allowed to capture a frame or start/stop recording of the camera/encoder image.

Allow Frame Capture

This provides for a capture of a frame of the camera/encoder image.

Allow Recording

This provides for a capturing of the camera/encoder video to an AVI file at approximately 10 frames per second.

Warning: Recording video can consume large amounts of disk space in a short amount of time.

Maximum

If recording is started the recording will stop:
A. If the window is closed and the recording is via Video for Windows
B. If the user selects to stop recording.
C. The maximum time (in seconds) is reached.

Note: When the size of the file is approximately 1.8 GB the file will be automatically closed and a new file created.

Delay Time

This provides for a delay between "Get" request to the camera/encoder. 0 = issue the next "Get" command as soon as the last "Get" command is completed. This can be used to lessen the load on the camera/encoder or network. This attribute only applies to camera/encoder types that use the "Get" method to collect images.

Timeout

This provides for a timer to issue a new collection/connect command after X time has elapsed without a response to a command.

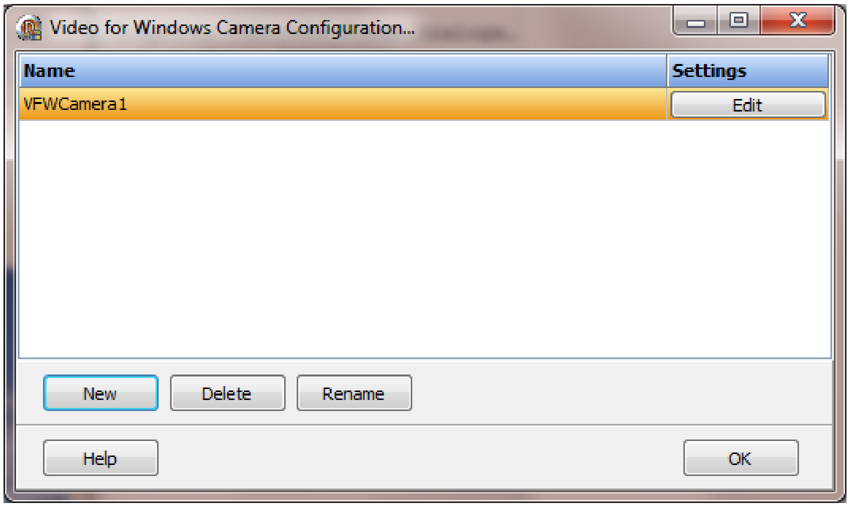
Note: RTSP connections can take many seconds to establish. If watchdogs are occurring, increase this value. A value greater than 15000 milliseconds is recommended, 30000 is a good value.

Loop length (IP camera/encoder only)

This provides for continuously recording the previous 1 to 20 minutes and via a command saving the loop to a file. This is accomplished by using two files. "A" file is the previous X minute clip and "B" is the current X minute clip. When the command to save the loop is executed the loops are saved to disk using the start time of the loop. The file name format is <port name-mmddyyyy-hhmmss>. Example file name, Camera_1-05312012-221435.avi

VFW VIDEO

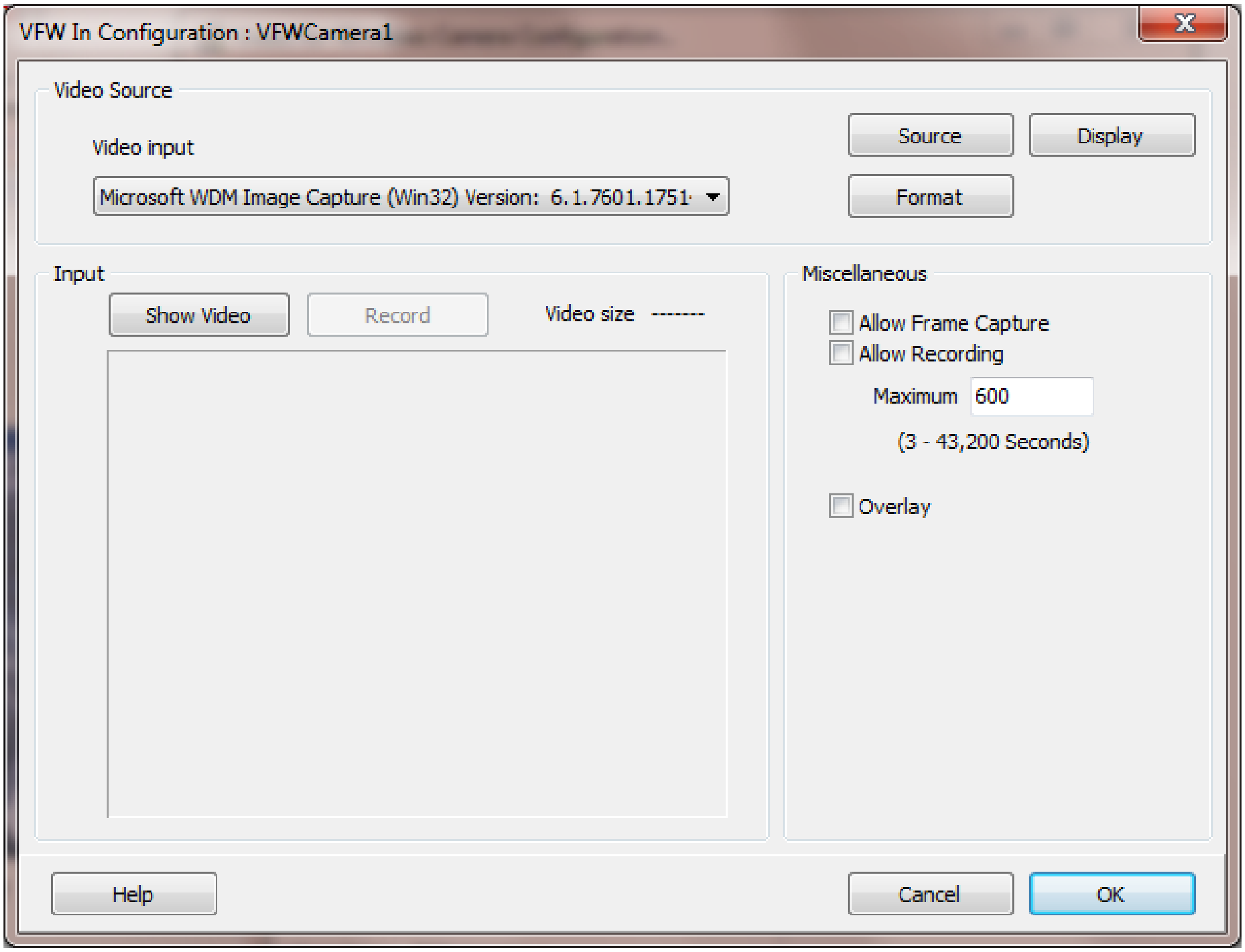
VFW (Video for Windows) is for cameras, generally, that are accessed via USB. While the HMI supports these type cameras they are not recommended. If using one is necessary be sure to read and heed the warnings about using a VFW camera.



Video for Windows Camera Configuration...
Name
Settings
VFWCamera1
Edit
New
Delete
Rename
Help
OK

The same camera can be referenced more than once but live images can only be accessed in one graphic element at a time. If the same camera is referenced in an open window or windows more than once an error will occur requiring restart of the computer.

SETTINGS


VFW In Configuration : VFWCamera1
Video Source
Source
Display
Format
Input
Show Video
Record
Video size -------
Miscellaneous
Help
Cancel
OK

Video input
Microsoft WDM Image Capture (Win32) Version: 6.1.7601.1751

☐ Allow Frame Capture
☐ Allow Recording
Maximum 600
(3 - 43,200 Seconds)
☐ Overlay

Video Input

Select the camera source. The selected name is the camera name and the version number.

Source, Display, Format

The camera driver may support additional settings for the camera. If the button is enabled selecting the button will attempt to display the driver dialog.

Overlay

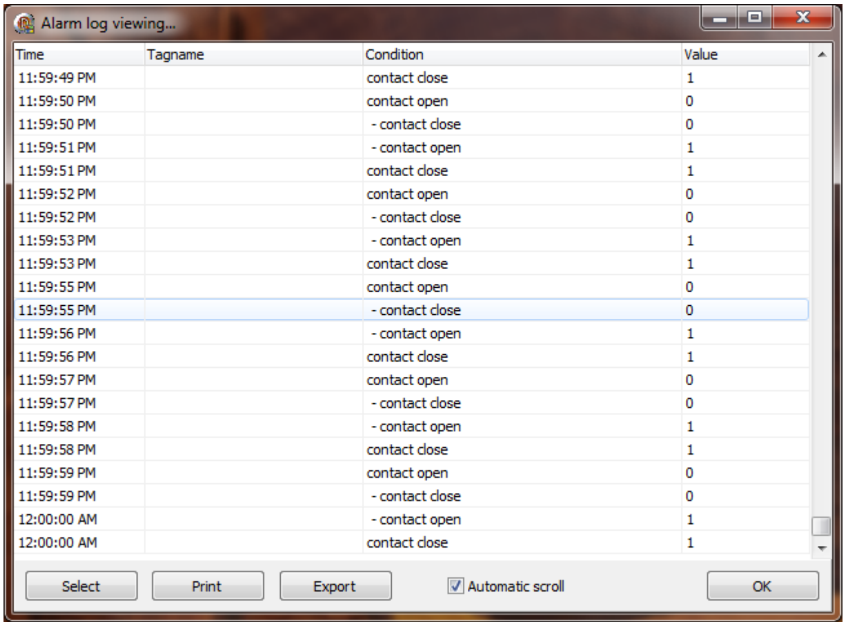
In overlay mode, video is displayed using hardware overlay. When not in overlay, preview mode, frames are transferred from the capture hardware to system memory and then displayed in the capture window using GDI functions. The default and preferred is not in overlay.

The remaining settings are above under “Common Settings”.

LOGS

The “Logs” menu provides a method to view, print and export logs.

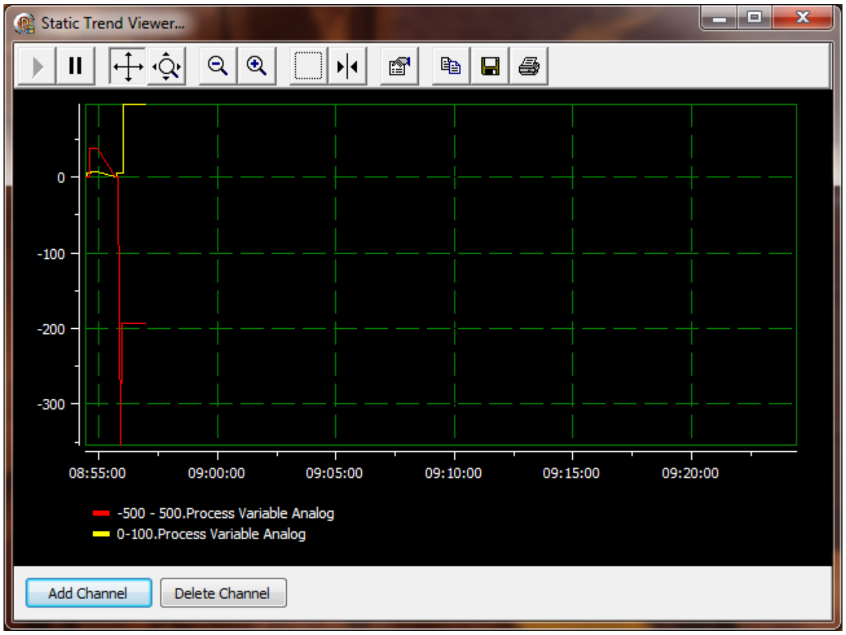
ALARM LOGS


Alarm log viewing...

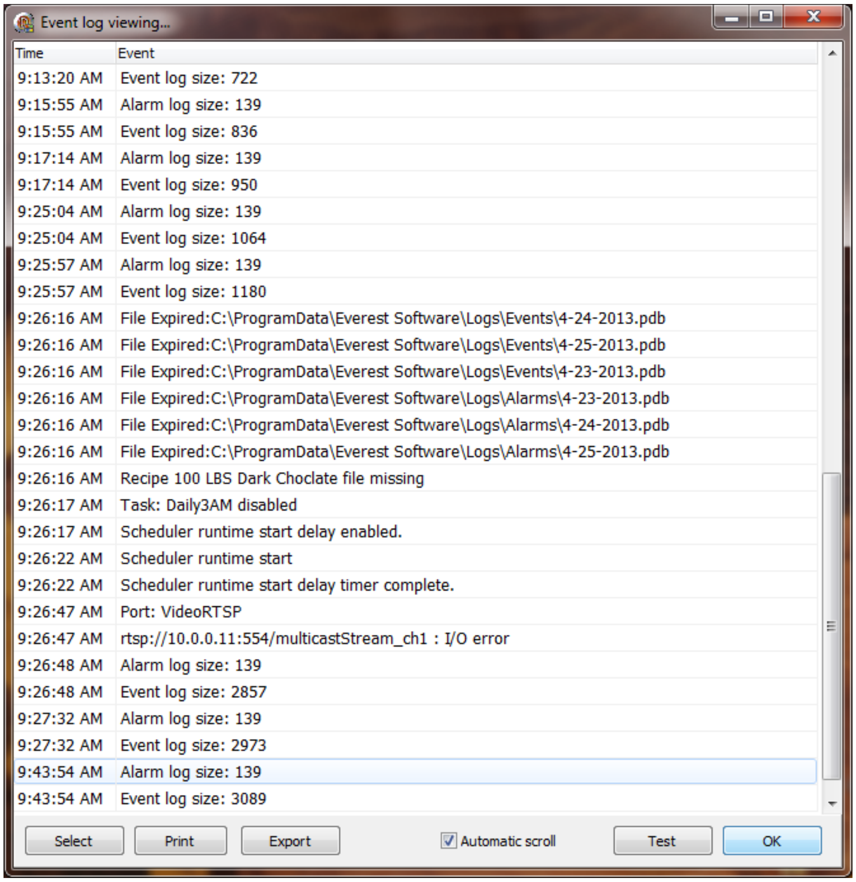
Time	Tagname	Condition	Value
11:59:49 PM		contact close	1
11:59:50 PM		contact open	0
11:59:50 PM		- contact close	0
11:59:51 PM		- contact open	1
11:59:51 PM		contact close	1
11:59:52 PM		contact open	0
11:59:52 PM		- contact close	0
11:59:53 PM		- contact open	1
11:59:53 PM		contact close	1
11:59:55 PM		contact open	0
11:59:55 PM		- contact close	0
11:59:56 PM		- contact open	1
11:59:56 PM		contact close	1
11:59:57 PM		contact open	0
11:59:57 PM		- contact close	0
11:59:58 PM		- contact open	1
11:59:58 PM		contact close	1
11:59:59 PM		contact open	0
11:59:59 PM		- contact close	0
12:00:00 AM		- contact open	1
12:00:00 AM		contact close	1

Select
Print
Export
☑ Automatic scroll
OK

DATA LOGS

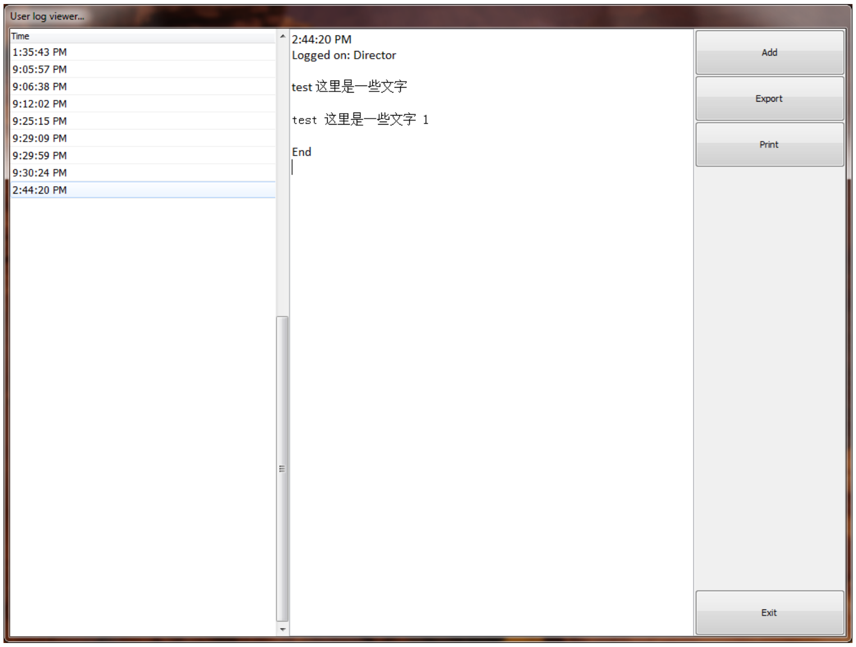

Static Trend Viewer...
0
-100
-200
-300
08:55:00
09:00:00
09:05:00
09:10:00
09:15:00
09:20:00
-500 - 500.Process Variable Analog
0-100.Process Variable Analog
Add Channel
Delete Channel

EVENT LOGS



Time	Event
9:13:20 AM	Event log size: 722
9:15:55 AM	Alarm log size: 139
9:15:55 AM	Event log size: 836
9:17:14 AM	Alarm log size: 139
9:17:14 AM	Event log size: 950
9:25:04 AM	Alarm log size: 139
9:25:04 AM	Event log size: 1064
9:25:57 AM	Alarm log size: 139
9:25:57 AM	Event log size: 1180
9:26:16 AM	File Expired:C:\ProgramData\Everest Software\Logs\Events\4-24-2013.pdb
9:26:16 AM	File Expired:C:\ProgramData\Everest Software\Logs\Events\4-25-2013.pdb
9:26:16 AM	File Expired:C:\ProgramData\Everest Software\Logs\Events\4-23-2013.pdb
9:26:16 AM	File Expired:C:\ProgramData\Everest Software\Logs\Alarms\4-23-2013.pdb
9:26:16 AM	File Expired:C:\ProgramData\Everest Software\Logs\Alarms\4-24-2013.pdb
9:26:16 AM	File Expired:C:\ProgramData\Everest Software\Logs\Alarms\4-25-2013.pdb
9:26:16 AM	Recipe 100 LBS Dark Choclate file missing
9:26:17 AM	Task: Daily3AM disabled
9:26:17 AM	Scheduler runtime start delay enabled.
9:26:22 AM	Scheduler runtime start
9:26:22 AM	Scheduler runtime start delay timer complete.
9:26:47 AM	Port: VideoRTSP
9:26:47 AM	rtsp://10.0.0.11:554/multicastStream_ch1 : I/O error
9:26:48 AM	Alarm log size: 139
9:26:48 AM	Event log size: 2857
9:27:32 AM	Alarm log size: 139
9:27:32 AM	Event log size: 2973
9:43:54 AM	Alarm log size: 139
9:43:54 AM	Event log size: 3089

USER LOG



Time
1:35:43 PM
9:05:57 PM
9:06:38 PM
9:12:02 PM
9:25:15 PM
9:29:09 PM
9:29:59 PM
9:30:24 PM
2:44:20 PM

2:44:20 PM
Logged on: Director

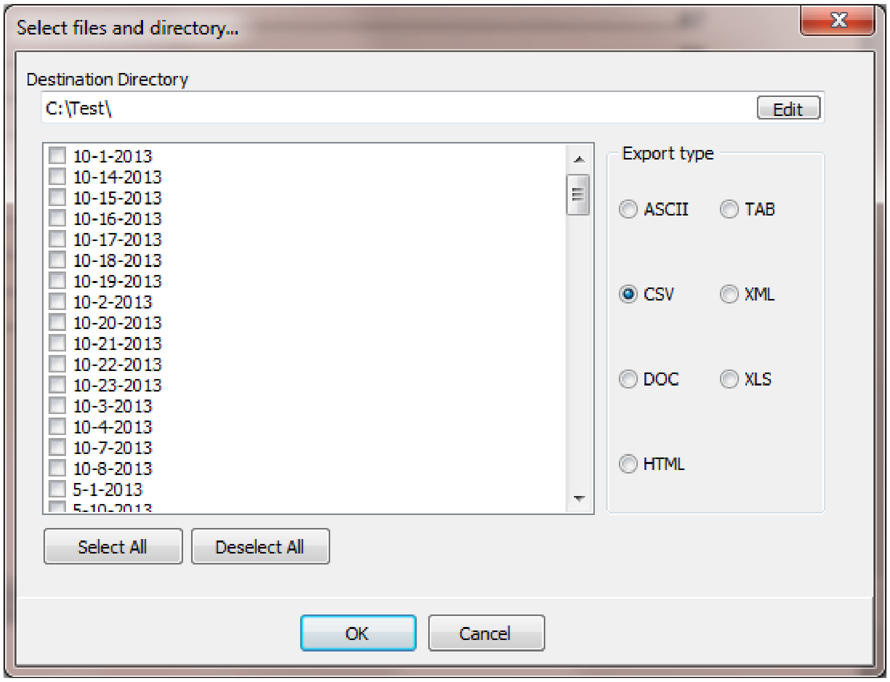
test 这里是一些文字

test 这里是一些文字 1

End

EXPORT

All of the logs, except the user log, can be exported to ASCII, tab delimited, comma separated values, XML (Extensible Markup Language), DOC (MS Word), XLS (MS Excel) or HTML (Hypertext Markup Language). The user log can be exported to a text file.



Select files and directory...

Destination Directory: C:\Test\

☐ 10-1-2013
☐ 10-14-2013
☐ 10-15-2013
☐ 10-16-2013
☐ 10-17-2013
☐ 10-18-2013
☐ 10-19-2013
☐ 10-2-2013
☐ 10-20-2013
☐ 10-21-2013
☐ 10-22-2013
☐ 10-23-2013
☐ 10-3-2013
☐ 10-4-2013
☐ 10-7-2013
☐ 10-8-2013
☐ 5-1-2013
☐ 5-10-2013

Export type

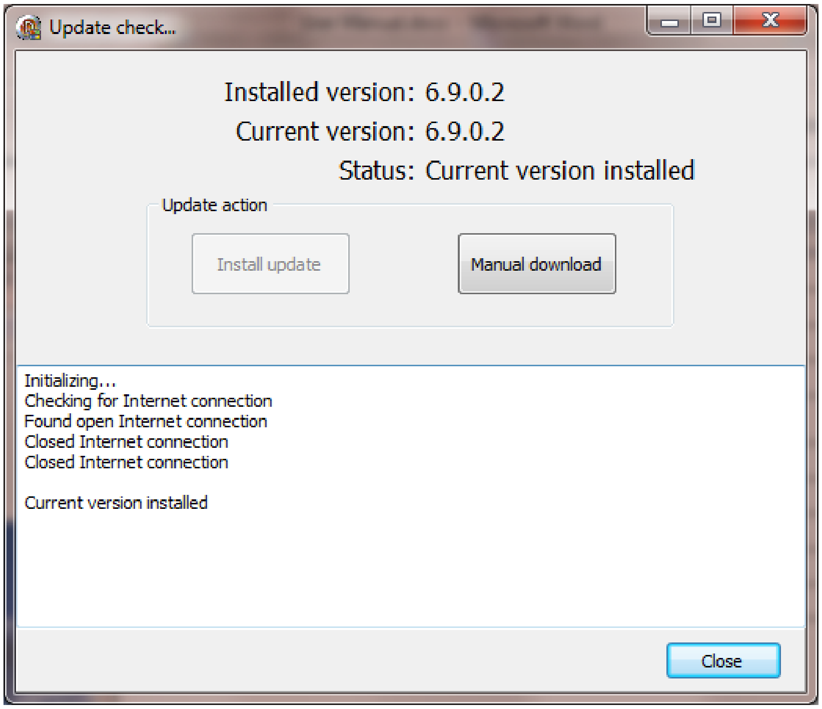
○ ASCII ○ TAB
● CSV ○ XML
○ DOC ○ XLS
○ HTML

HELP

The help menu contains several items.
F1 is the help command. The help system is comprised of many help files that are available when in context.
For example, the graphics help file is available when the graphic editor is open.

CHECK FOR UPDATE

A connection to the internet is required for this feature to function. The program will connect to the internet and attempt to fetch the version number of the latest HMI software release.



Installed version: 6.9.0.2
Current version: 6.9.0.2
Status: Current version installed

```
Initializing...
Checking for Internet connection
Found open Internet connection
Closed Internet connection
Closed Internet connection

Current version installed
```

The installed software version and the current released version will be displayed. The “Install update” button will be enabled if a newer version is available. Selecting the button will download the version and via prompting, the latest version can be installed on the computer.

The “Manual download” button is used to manually download the installer to the computer. This would be used, for example, if the HMI software needed to be installed on another computer.

ABOUT

The about dialog will be displayed. It will display the software version, license date, licensee, key ID, type of license, website, support email address and copyright notice.

POINTS

A point is a data object. Via configuration, it contains all the settings required to connect to a “port” (See the section on communications).

A point can be configured to provide alarming, publish the point’s properties to the built in OPC server, scale values, etc.

The HMI has six point types.

Analog and Analog Host
Analog has a connection to an external device via one of the ports and Analog host is a point that is internal to the HMI.

Digital and Digital Host
Digital has a connection to an external device via one of the ports and Digital host is a point that is internal to the HMI.

Analog and Digital Host pointer
These two point types are provided to “point” at other points. It is provided to allow “indexing” or “arraying” of points.

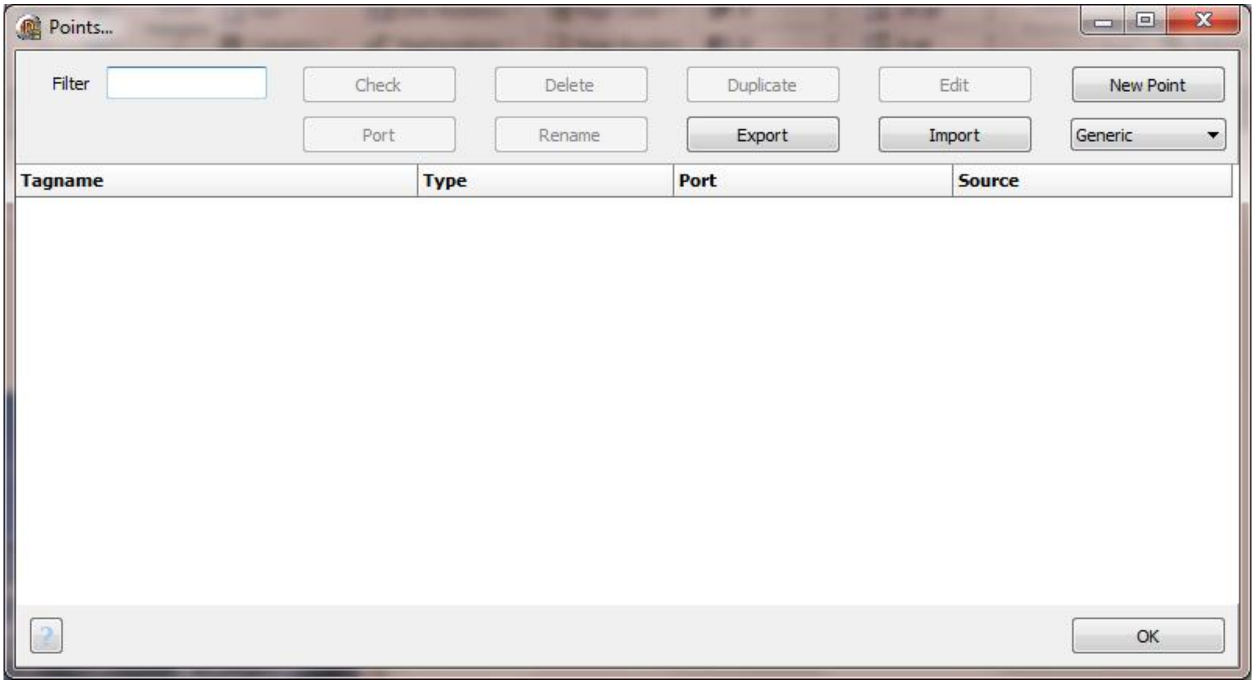
The nature of two protocols requires a modifier to the six point types. The modifier is required to allow easier configuration of the source address (see source address below).

Generic
This is the default modifier applied to all points that are not OPC or Bacnet/IP.

OPC
If the port type is “OPC client” the OPC modifier must be applied.

Bacnet/IP
If the port type is Bacnet/IP the “Bacnet” modifier must be applied.

CONFIGURATION


Points...
Filter
Check
Delete
Duplicate
Edit
New Point
Port
Rename
Export
Import
Generic
Tagname
Type
Port
Source
OK

Filter

Enter characters in this field to show only those tagnames matching the filter string.

Delete

The selected point will be deleted.

Duplicate

Select a point(s) to duplicate. A window will appear to allow the duplicated point tagname and source to be modified. (See below)

Edit

The selected point edit mode will begin if selected.

Export

Export the point configuration to a file. (See below)

Import

Import the point configuration from a file. (See below)

New Point

Below the new point button is a drop down list. In the list are three point "modifiers".

Generic

Most source port kinds are generic (MODBUS, DF1, etc.).

OPC

Select this kind if the source port is an OPC server.

Bacnet

Select this kind if the source port is a Bacnet/IP device.

Port

Use this command to change the port assignment for the selected port. This is provided to allow the change the port assignment for number of points with one action. (See below)

Rename

Select a point(s) to rename. A window will appear to allow renaming of the selected points. (See below)

POINT DEFINITIONS

The characteristic or attributes that are common to all point types are defined below.
Following that section are characteristics/attributes that are defined for at least two types of data points.
Following that section are all the characteristics/attributes unique to a type of data point.

COMMON

Tagname

All points must have a tagname that is unique for the project. Tagnames are case sensitive. Example: *AS-101-A* and *AS-101-a* are different and both are legal tagnames.

Tagnames can be up to 255 characters.

A tagname cannot begin with a <space> or <tab> character.

The following characters are not allowed in tagnames.

< > | "(double quote) \ / : * ? ~ ^

A tagname can contain a comma (,). If point configurations are exported or imported the comma may interfere with exporting and importing of points. Use a period (.) in place of a comma.

NOTES:

If a point is published for the OPC server the "." (period) character is used by OPC devices to delimit items. While "." is a legal character in a tagname and can be used, as it is in some OPC client tagnames, be aware that it does, in some cases, have a special meaning.

Tagnames to be used to issue commands from a web browser cannot contain symbols that are reserved. Tagnames that are only monitored do not have this limitation. Only tagnames coming to the HTTP web server from the browser have this limitation.
Spaces are not allowed. The browser will convert a "space" to a "+".

In addition, special characters or 8-bit values are converted into their hexadecimal equivalents and prefaced with a percent sign (%).

For example"<" is converted to %3C,">" is converted to %3E.

Description

All points can have a description.

Access Rights

Read

Runtime will read the value from the source in the port configured.

Read/Write

Same as read and writes are permitted. For writes, the internal value is changed followed by a write to the configured port.

Write

The point is "write" only. Commands to set the value will be sent to the source in the port configured.

Notes:

Points that have a source address in a "Logix" port do not support write only access. Points that need to allow write commands to the controller must have read/write access.

Port

This will be one of the configured ports. e.g. MODBUS Master, OPC Client, AB Logix, GE SNP-X.

Source

This is the source address in the port. It is a reference to the data in the device defined in the port configuration. e.g. 400003, 400012/15, ES-100.PV

Refer to the communication section and the port type for source addressing examples.

Engineering Units

Example: GPM, PSI

High EU (Engineering Units)

The highest value of the point.

Low EU (Engineering Units)

The lowest value of the point.

Normal Condition Status

If an alarm condition is enabled and configured to "log" and an alarm condition returns to a normal condition this value is prefixed in the alarm log to the alarm condition status.

OPC Published

All points are hidden from the OPC server. This instructs the OPC server to publish this point.

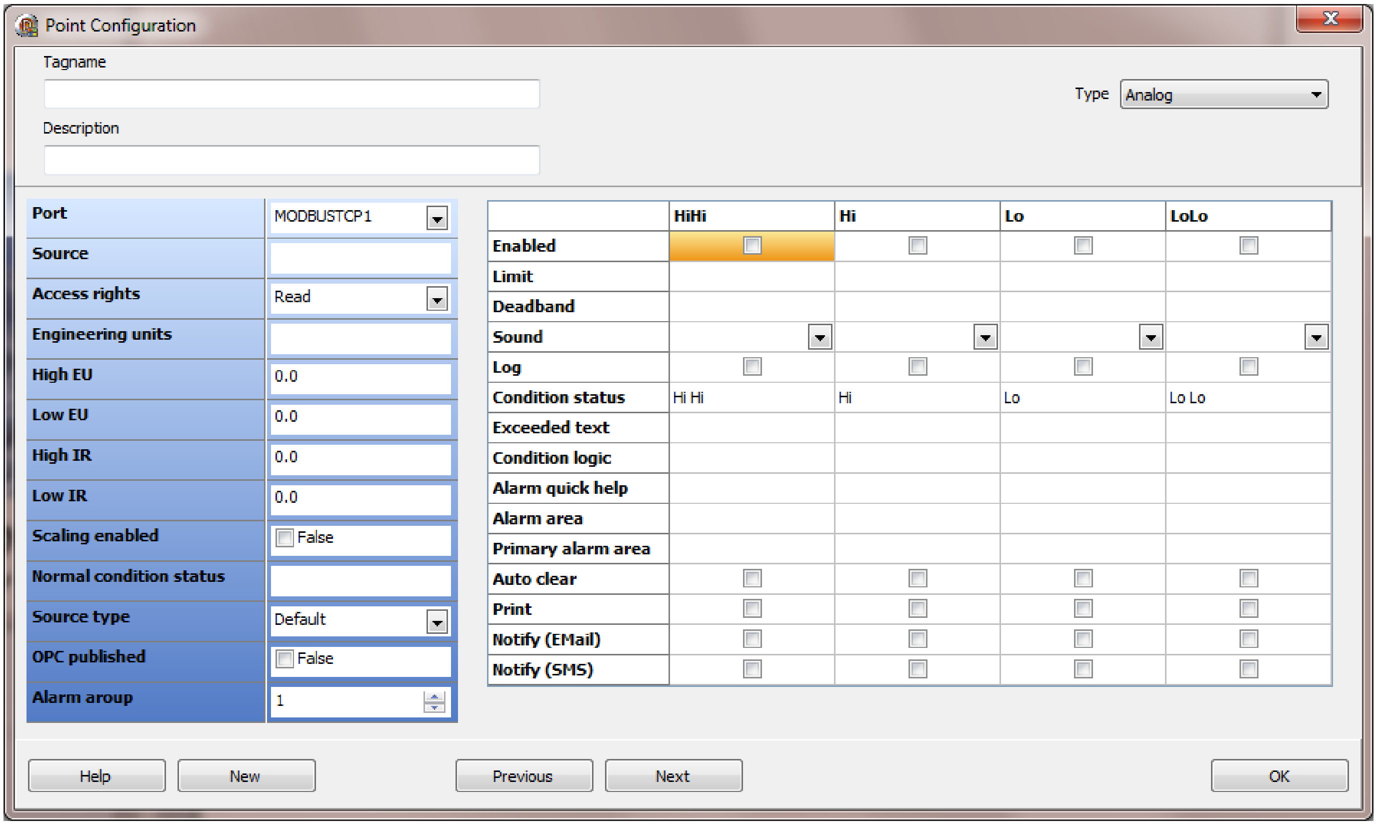
Script

The host analog and digital points can contain script commands. These scripts are executed continuously.

Alarm Group

The alarms for this point are a member of this number alarm group.

ANALOG



Tagname

Description

Type: Analog

Port	MODBUSTCP1
Source	
Access rights	Read
Engineering units	
High EU	0.0
Low EU	0.0
High IR	0.0
Low IR	0.0
Scaling enabled	☐ False
Normal condition status	
Source type	Default
OPC published	☐ False
Alarm group	1

	HiHi	**Hi**	**Lo**	**LoLo**
Enabled	☐	☐	☐	☐
Limit				
Deadband				
Sound				
Log	☐	☐	☐	☐
Condition status	Hi Hi	Hi	Lo	Lo Lo
Exceeded text				
Condition logic				
Alarm quick help				
Alarm area				
Primary alarm area				
Auto clear	☐	☐	☐	☐
Print	☐	☐	☐	☐
Notify (EMail)	☐	☐	☐	☐
Notify (SMS)	☐	☐	☐	☐

The panel on the left side is for addressing, scaling, publishing, etc. The panel on the right side is the alarm panel. The alarm panel is described under “Alarm settings” below.

High IR (Instrument Range)

The highest instrument value of the point. This is used if scaling is enabled. Example: The engineering range is 0-100 gallons. The instrument range is 0-4095. If scaling is enabled and the value from the source is 2048 the value of the point would be 50.

Count	Gallons
0	0
1024	25
2048	50
3072	75
4095	100

If scaling is not enabled High and Low IR are ignored.

Low IR (Instrument Range)

The lowest instrument value of the point. See High IR.

Scaling Enabled

Used to scale instrument value to engineering value. See High IR.

Source Type

Unless specified by selecting one of the following options the source data format is assumed to be a 16 bit integer. In most applications, it is correct. Not all port types support all data types.

MODBUS

By default, for MODBUS master ports, the source address for an analog point is a two byte register that is a word (0 .. 65,535).

If "Float" is selected the source address is considered the first register of the floating point data. Example: If the source address is 400100, the complete source is register 400100 and 400101. The float byte order is set in the port configuration.

If "Integer" is selected the source address is considered the first register of the integer point data and the range is -2,147,483,648 ... 2,147,483,647. Example: If the source address is 400100, the complete source is register 400100 and 400101. The integer byte order is set in the port configuration.

If "Small Integer" is selected the range is -32,768 .. 32,767.

If "Unsigned Integer" is selected the source address is considered the first register of the integer point data and the range is 0 .. 4,294,967,295. Example: If the source address is 400100, the complete source is registers 400100 and 400101. The integer byte order is set in the port configuration.

LOGIX, BACNET/IP

Select "Float" to allow for collection of floating point data from a controller/device for the point. If this attribute is not set to "Float" and the source address is a floating point reference the data from the controller will not be valid.

If the source address referenced is a byte, small integer or integer, do not enable this attribute.

The 32-bit floating point values are assumed to be IEEE-754 standard format.

SIEMENS S7-200, S7-300/400/1200

If the address is a floating point register or a double word register select the appropriate value. If the analog value is a byte or two byte word the program will select the correct data decoding based on the source address. For floating point references use the "D" address parameter and select "Float" Example: VD60 with "float" selected would instruct the program to read the four bytes as a floating point value. VD60 with "Integer" selected would instruct the program to read the four bytes as a double word value.

ODBC In

This does not apply to ODBC. The value is assumed to be a float.

BCD 2

For numeric use Automation Direct defaults to two byte BCD (Binary coded decimal).
K-Sequence and Omron are the only ports using this data type.
If your application needs BCD support, please contact support.
Note: We could not verify negative BCD operations.

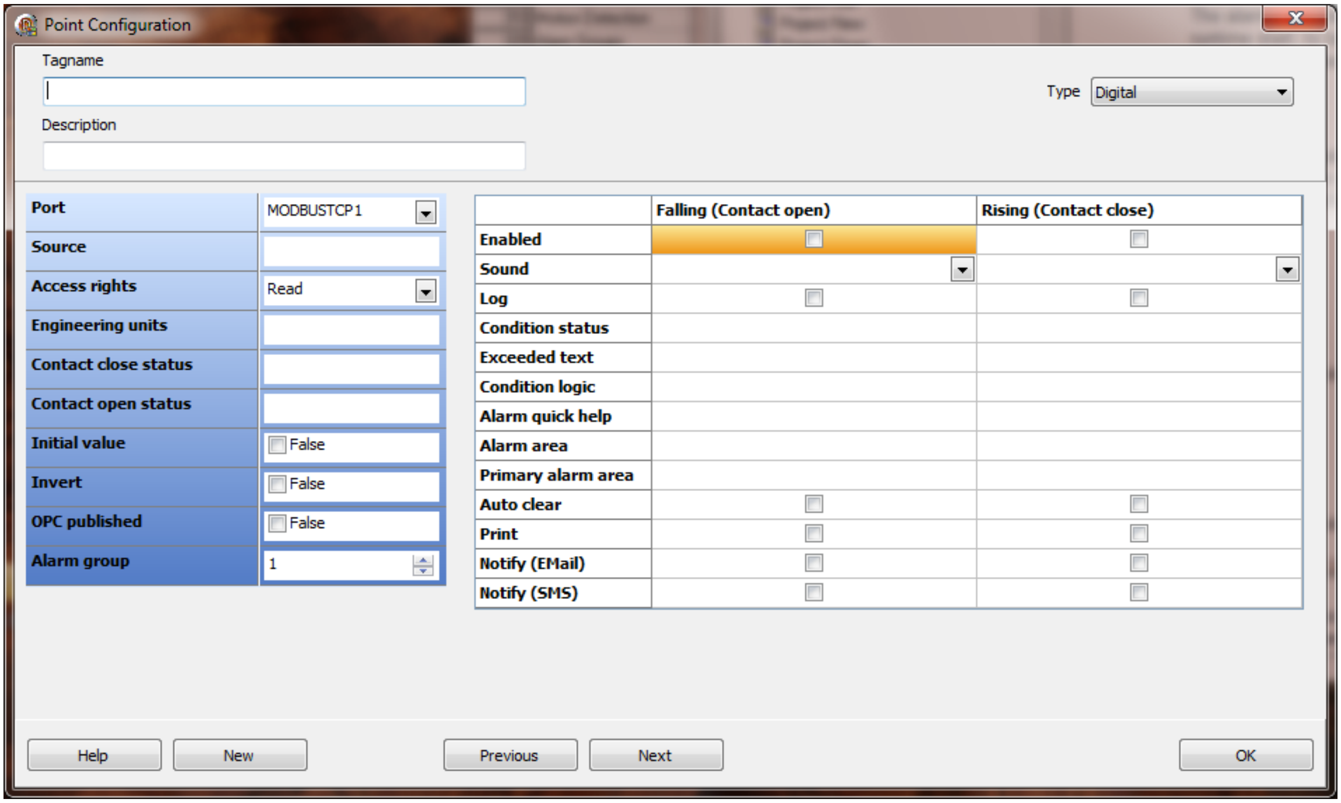
Omni

Omni has 3 analog data types. 16 bit and 32 bit signed integers are supported by default; the type selection is not used. Float is the third and the type selection must be set to float for correct operation.

Delta Motion Control (DMCP)

DMCP has 3 analog data types.
1) 32 bit signed integers are supported by default; the type selection is not used.
2) 32 bit unsigned integers, select "Unsigned integer".
3) 32 bit float select "Float".

DIGITAL



Tagname

Description

Type Digital

Port	MODBUSTCP1
Source	
Access rights	Read
Engineering units	
Contact close status	
Contact open status	
Initial value	☐ False
Invert	☐ False
OPC published	☐ False
Alarm group	1

	Falling (Contact open)	**Rising (Contact close)**
Enabled	☐	☐
Sound		
Log	☐	☐
Condition status		
Exceeded text		
Condition logic		
Alarm quick help		
Alarm area		
Primary alarm area		
Auto clear	☐	☐
Print	☐	☐
Notify (EMail)	☐	☐
Notify (SMS)	☐	☐

The panel on the left side is for addressing, publishing, etc. The panel on the right side is the alarm panel. The alarm panel is described under “Alarm settings” below.

Contact Close Status

Text to describe the meaning of the input when it is closed (true).

Contact Open Status

Text to describe the meaning of the input when it is open (false).

Initial Value

The alarms are transition triggered. i.e. The value was true and is now false or the value was false and is now true. This provides for the value, at runtime start, to be set true so it is not required for the value to transition true and then transition false to activate an alarm on a falling trigger, if enabled. If enabled and when the first data for the point is received if the new value is false the falling trigger alarm will be activated.

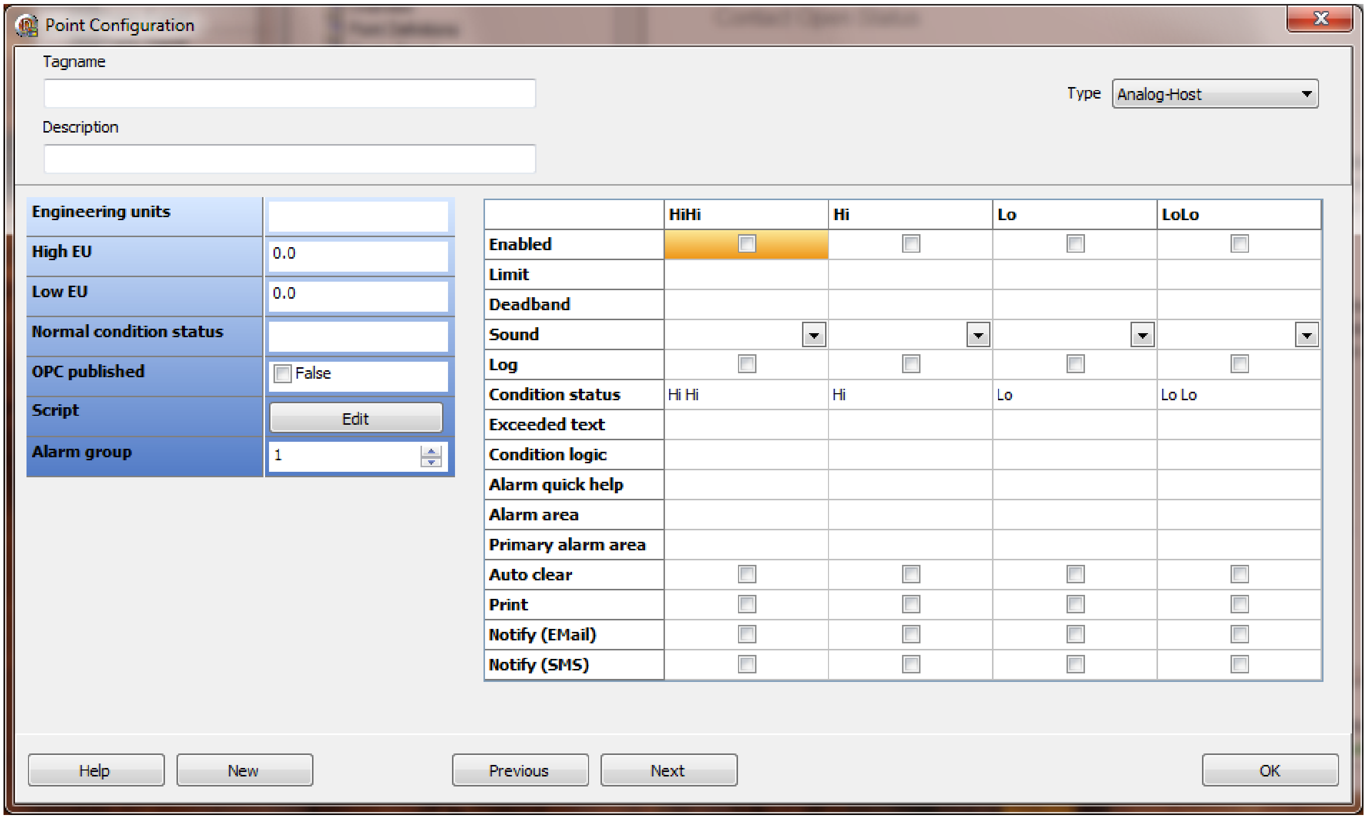
Invert

When the data value is collected from the external device the input is inverted.

If the tag is "write only" the data value is transmitted to the external device without change.
If the tag is "read/write" the data value is inverted and transmitted to the external device.

ANALOG HOST

This point is similar to the analog point. It is internal to the HMI program. The type is “Float”. The main difference is the “Analog Host” point can contain a script. See the section on scripting for more information on point scripts.



Tagname

Description

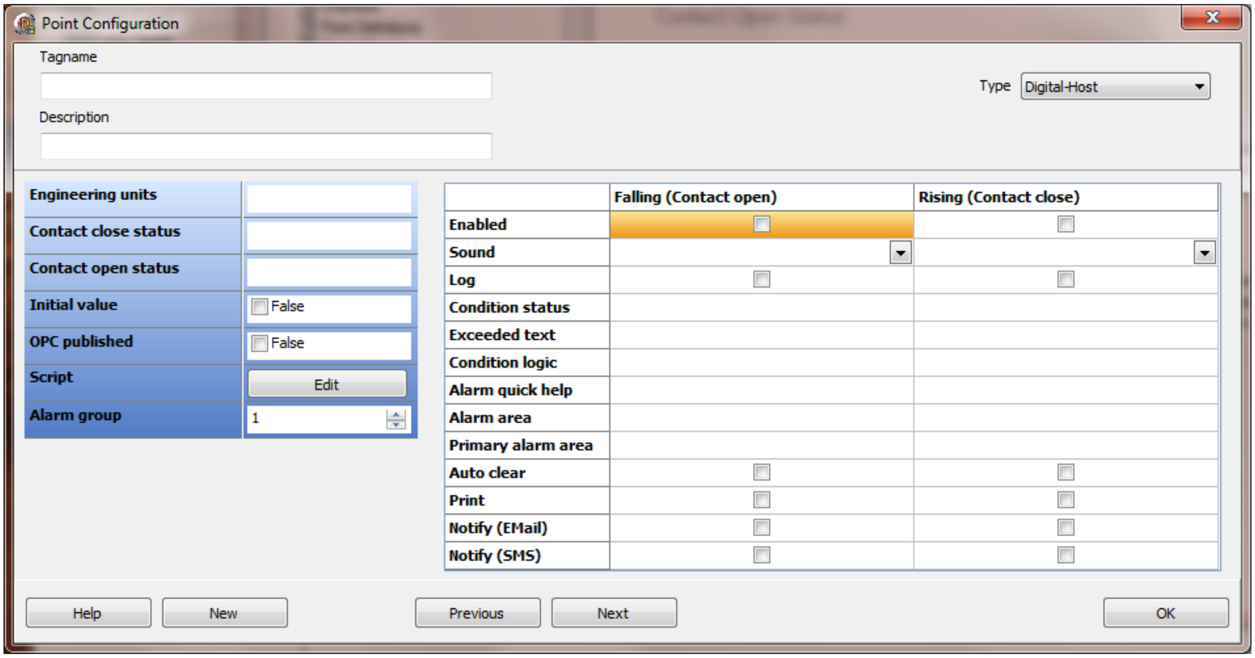
Type Analog-Host

Engineering units	
High EU	0.0
Low EU	0.0
Normal condition status	
OPC published	☐ False
Script	Edit
Alarm group	1

	HiHi	**Hi**	**Lo**	**LoLo**
Enabled	☐	☐	☐	☐
Limit				
Deadband				
Sound				
Log	☐	☐	☐	☐
Condition status	Hi Hi	Hi	Lo	Lo Lo
Exceeded text				
Condition logic				
Alarm quick help				
Alarm area				
Primary alarm area				
Auto clear	☐	☐	☐	☐
Print	☐	☐	☐	☐
Notify (EMail)	☐	☐	☐	☐
Notify (SMS)	☐	☐	☐	☐

DIGITAL HOST

This point is similar to the digital point. It is internal to the HMI program. The main difference is the “Digital Host” point can contain a script. See the section on scripting for more information on point scripts.



Tagname

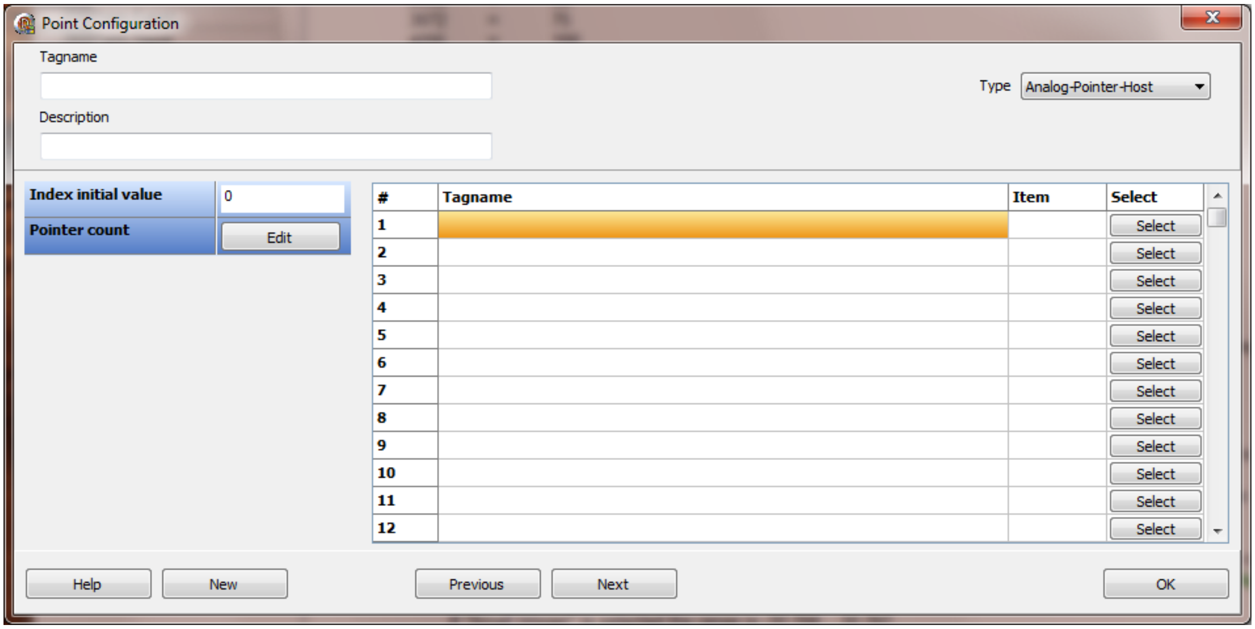
Description

Type: Digital-Host

Engineering units	
Contact close status	
Contact open status	
Initial value	☐ False
OPC published	☐ False
Script	Edit
Alarm group	1

	Falling (Contact open)	**Rising (Contact close)**
Enabled	☐	☐
Sound		
Log	☐	☐
Condition status		
Exceeded text		
Condition logic		
Alarm quick help		
Alarm area		
Primary alarm area		
Auto clear	☐	☐
Print	☐	☐
Notify (EMail)	☐	☐
Notify (SMS)	☐	☐

ANALOG HOST POINTER



Type: Analog-Pointer-Host

Index initial value: 0

Pointer count

#	Tagname	Item	Select
1			Select
2			Select
3			Select
4			Select
5			Select
6			Select
7			Select
8			Select
9			Select
10			Select
11			Select
12			Select

This is a pointer type point. It is used to have a single tagname "point" to other tagnames based up the value of the "index".

For example: A system has 5 water pumps. All pumps have the same type of analog pressure input, flow input, lube oil pressure, etc..

The desired design is for the user to view each pump, one at a time, on a screen.

The pump pressure is to be shown as a "read out" on the screen. Place the first pump pressure tagname/item in the first row of the grid. The second in the second and so on. When the graphic is created tag the pressure read out to the "Analog Host Pointer" tagname/item.

When the screen is open, in a script, set the index value of the "Analog Host Pointer" to the number of the pump to be viewed.

One screen can be used to view many different systems of the same type.

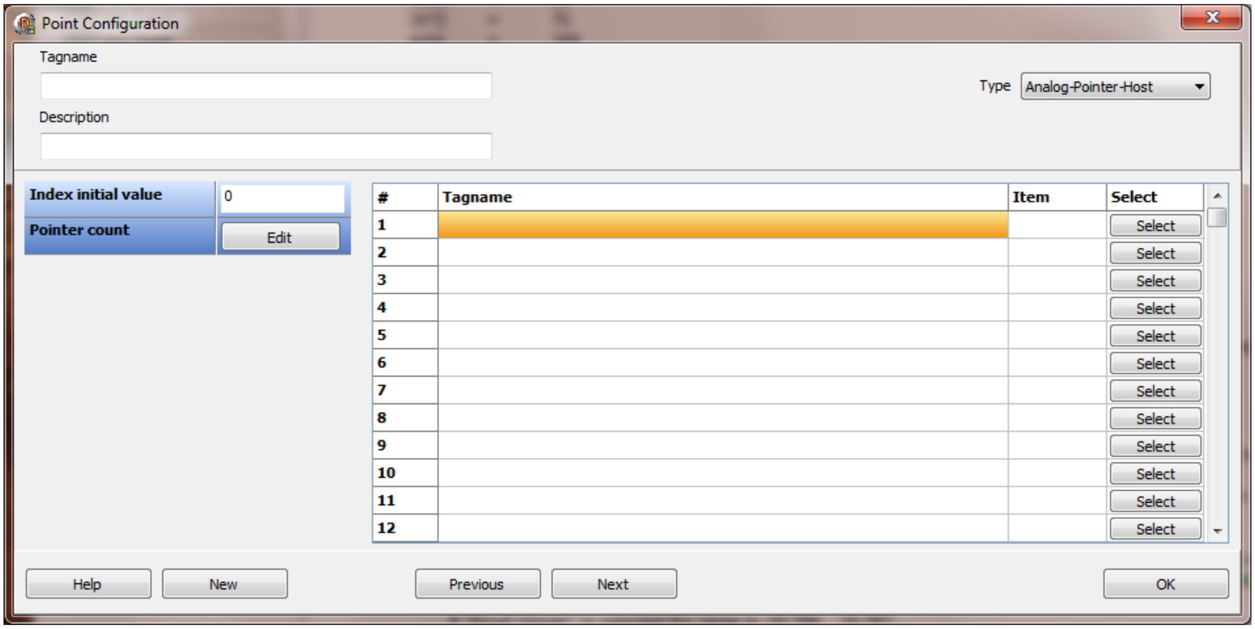
Index Initial Value

At runtime start, the value to set the index.

Pointer Count

The number of pointers this point supports. Set the value to the number of pointers this point requires. Setting this value greater than the number really needed only slows down processing in those areas utilizing this point type.

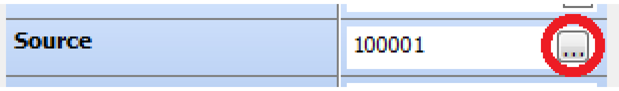
DIGITAL HOST POINTER


Point Configuration
Tagname
Description
Type
Analog-Pointer-Host
Index initial value
0
Pointer count
Edit
#
Tagname
Item
Select
1
2
3
4
5
6
7
8
9
10
11
12
Select
Help
New
Previous
Next
OK

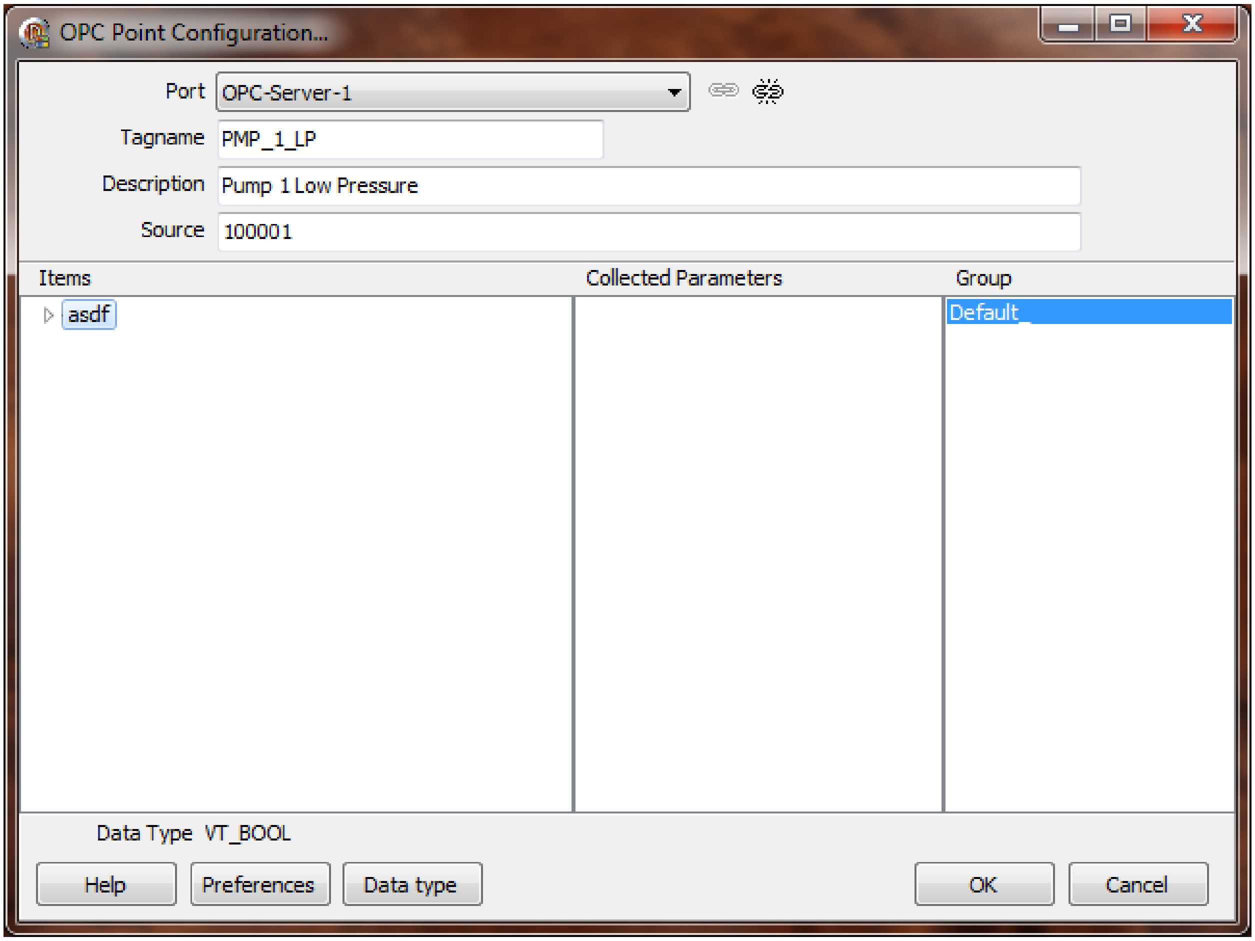
See the “Analog Host Pointer" above.

SOURCE ADDRESS

OPC


Source
100001

If the point type modifier is OPC and the source address button is selected, the OPC Point configuration dialog is displayed.


OPC Point Configuration...
Items
Collected Parameters
Group
asdf
Default_
Help
Preferences
Data type
OK
Cancel
Port OPC-Server-1
Tagname PMP_1_LP
Description Pump 1 Low Pressure
Source 100001
Data Type VT_BOOL

Port

This is the OPC port assigned to the point.

Next to the "Port" combo box are two small icons. The first one is to connect to the server selected in the combo box and the second is to disconnect from the server if connected. Depending on the preferences connection to the server may occur when the window is opened and disconnected when the window is closed.

Tagname

The point tagname. The tagname might be generated if the server is browsed for items and the preferences are configured to generate the tagname. See OPC Client Configuration Preferences.

Description

The point description.

Source

The item ID in the server. The is the full item ID used to identify what item in the server provides the data.

Items

When a connection to the server is established a command to browse all items in the server will be executed. The result will be displayed in the items tree view.

Collected Parameters

When the mouse button is clicked on one of the items in the items tree view and the item is a valid item, not a branch, a command to collect other item properties of the item is executed. The result is shown in the collected parameters checkbox list. Enable the checkbox for the values to be imported into the points fields. This operation is only performed at design time. The is provided so the values the server has configured for a point can be viewed, verified and used if needed for each point created. Those collected parameter items that are not checked are ignored. To disable the collection of other item properties see: Preferences.

Group

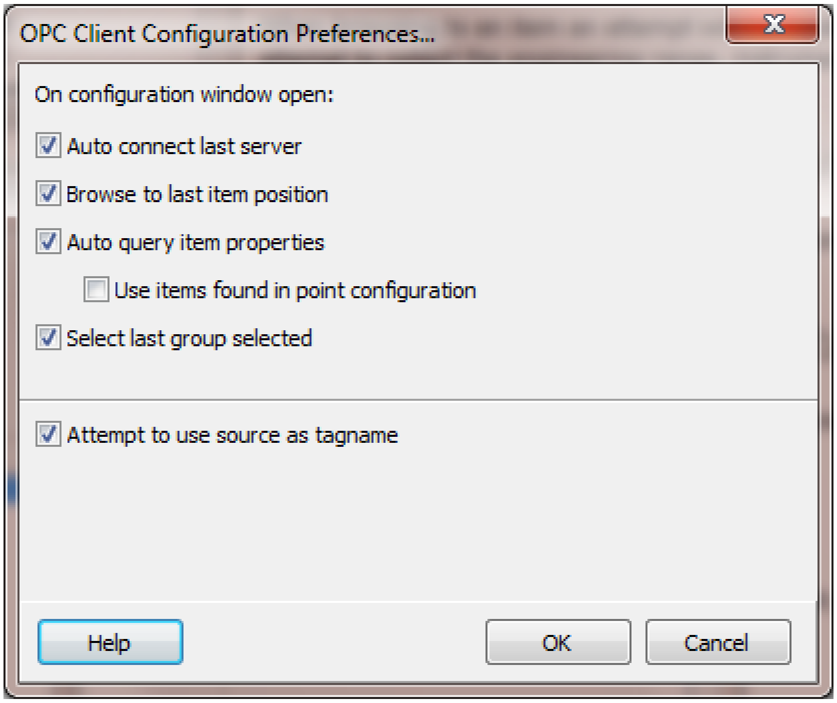
Each OPC point must belong to a group. This is a group in the server. Select which group this point is a member.

Data type field and button

This displays the data type of the item selected when the mouse button is clicked on an item in the items tree view. If possible the data type is collected from the OPC server. If a connection to the OPC server is not possible a data type must be selected.

OPC CLIENT CONFIGURATION PREFERENCES

Selecting the “Preference” button displays the “OPC Client Configuration Preferences” dialog.



On configuration window open:

☑ Auto connect last server

☑ Browse to last item position

☑ Auto query item properties

  ☐ Use items found in point configuration

☑ Select last group selected

☑ Attempt to use source as tagname

Auto connect last server

When the window is opened an attempt to connect to the last server will be made.

Browse to last item position

If a connection to the server on window open is successful and this preference is enabled an attempt to browse the server to the last item selected will occur.

Auto query item properties

When browsing to an item an attempt will be made to query additional items connected to this "source item". For example, if the item is an analog type, an attempt to collect the engineering range, instrument range, etc. will be made. (This does not apply to OPC strings.)

Use items found in point configuration

If items are collected the point configuration values will be set to the server values.

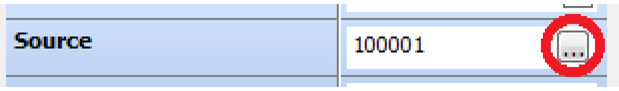
Attempt to use source as tagname

On a new item, when an item is selected the tagname field will be filled in with the source item name. (This does not apply to OPC strings.)

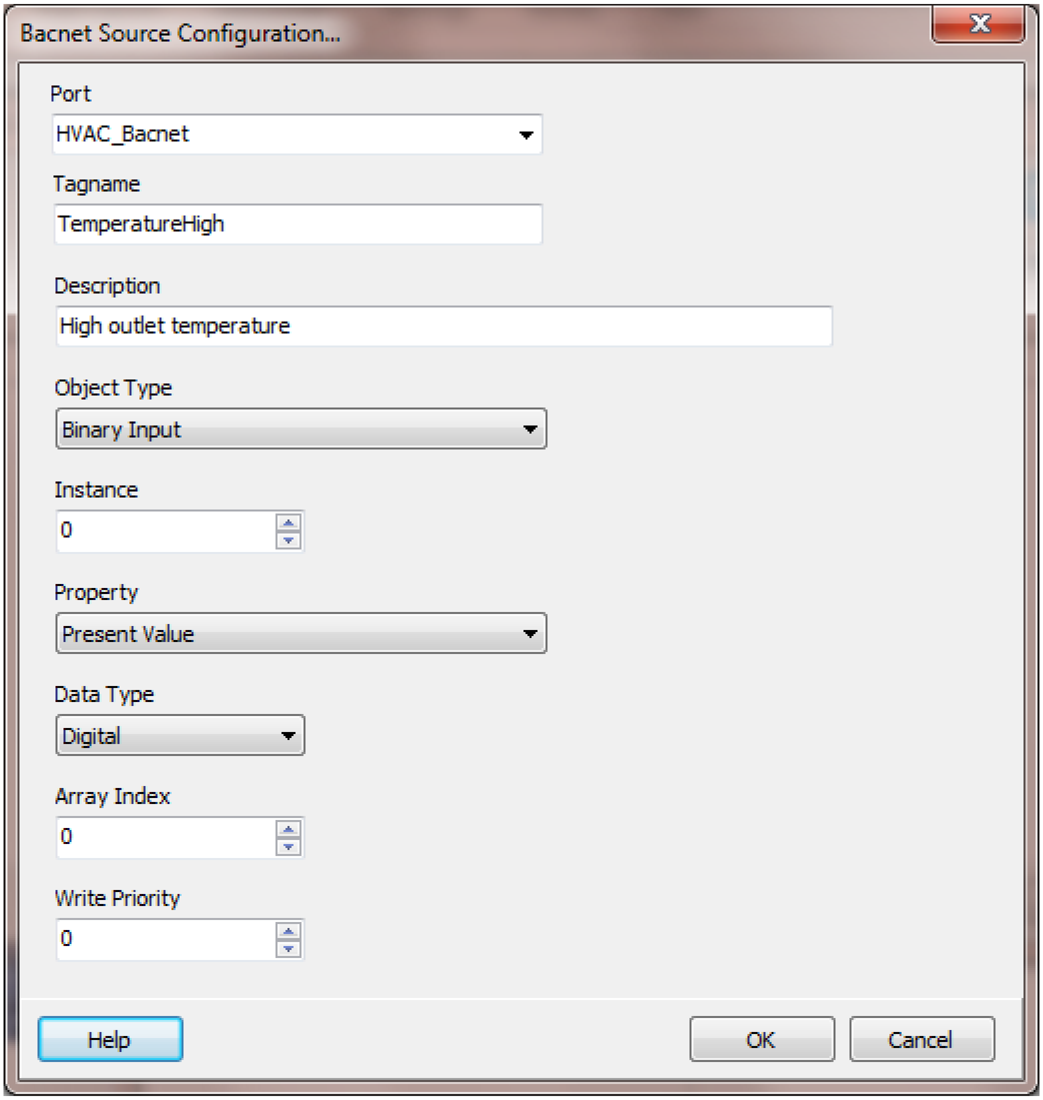
Select last group selected

On a new item, when the window is open the last group selected will be selected again.

BACNET/IP


Source: 100001

If the point type modifier is Bacnet and the source address button is selected, the Bacnet source configuration dialog is displayed.


Bacnet Source Configuration...

Port: HVAC_Bacnet

Tagname: TemperatureHigh

Description: High outlet temperature

Object Type: Binary Input

Instance: 0

Property: Present Value

Data Type: Digital

Array Index: 0

Write Priority: 0

Addressing

A Bacnet/IP source address consists of three required parts and one optional part. The parts are delimited by a period (".") character.

1. Object type
2. Object instance
3. Property identifier
4. Array index (optional)

<object type>.<object instance>.<property identifier>.<array index>

Examples:

Analog Value.1.Present Value
Analog Value.1567.Present Value
Binary Input.33.Present Value
Binary Output.78.Present Value
Analog Output.35.Present Value.45

Object Type

Select the object type in the device.

Instance

Select the object instance in the device. The range is 0 - 4194303. Note: The device will define which instances are supported.

Property

All of the Bacnet properties are listed but not all data types are supported. For example: string, data/time, etc. data types are not supported. Verify the selected property type is analog or digital. Real and Boolean are supported.

Data Type

Select analog or digital.

Array Index

This field is optional. 0 indicates the value will be ignored. Array indexes begin at 1 and the upper limit is determined by the device.

Write Priority

Bacnet has 16 possible write priorities. 1 is the highest and 16 is the lowest. 0 is the default. If 0 is selected the write priority is ignored. If this point is not configured as read/write or write the write priority is ignored.

ALL OTHERS

The source address structure for all other port types is defined in the communications section for the port type. Examples are provided. Contact support if you need help in source addressing.

ALARM SETTINGS

These are all the alarm setting definitions for all points.

Alarm Area

Text that can provide the location of the alarm. (Optional)

Alarm Quick Help

Text that can provide additional information to the user about the alarm. (Optional)

Auto Clear

When the conditions are present to permit the alarm condition to return to the normal condition (reset, cleared) it will without any user action. Otherwise, the alarm must have been acknowledge.

Condition Logic

Additional text to describe the logic used in the calculation. (Optional)

Condition Status

The alarm text. (Optional)

Enabled

Used to enabled the alarm.

Exceeded Text

Additional text to describe the alarm. (Optional)

Deadband

This is the percent of full scale the point current value must be above or below the limit to allow the alarm condition to be set to false (normal condition).

Example:
Range: 100, Hi Limit: 50, Deadband: 3

The alarm condition will become active when the point value is greater than or equal to 50. The alarm condition will be able to be cleared (reset, return to normal) at 47.

Limit

The alarm value threshold the point value must cross or be equal to, to set the alarm condition to true.

"Hi Hi" and "Hi" are rising alarms. The alarm condition is set to true when the point current value is equal or greater than the limit (current value >= alarm limit).

"Lo Lo" and "Lo" are falling alarms. The alarm condition is set to true when the point current value is equal or less than the limit (current value <= alarm limit).

Log

If enabled, when the alarm condition transitions to true, an entry will be entered in the daily alarm log. When the alarm condition transitions to false a "return to normal" entry will be entered in the daily alarm log. (Optional)

Primary Alarm Area

Text that can provide the location of the alarm. (Optional)

Sound

If a sound name is entered the sound will play when the alarm condition transitions to true. The sound will play until the "Silence" command is activated. (Optional)

Print

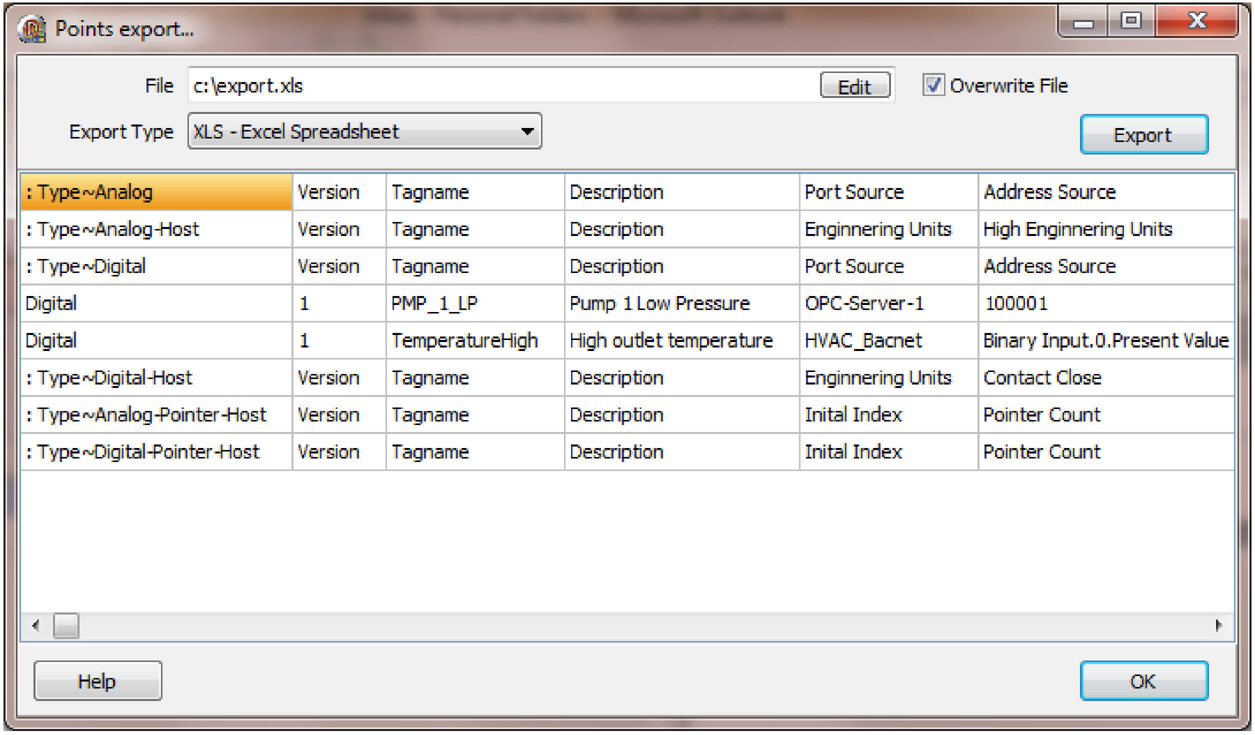
If enabled, when the alarm condition transitions to true, an entry will be output to the configured printer. When the alarm condition transitions to false a "return to normal" entry will be output to the configured printer. (Optional)

Notify Email/SMS

If enabled, when the alarm condition transitions to true the Notifications - EMail and/or Notifications - SMS logic will process the alarm. (Optional)

EXPORT

The points can be exported to a tab delimited, comma separated values or XLS (MS Excel) file.



File c:\export.xls

☑ Overwrite File

Export Type XLS - Excel Spreadsheet

: Type~Analog	Version	Tagname	Description	Port Source	Address Source
: Type~Analog-Host	Version	Tagname	Description	Enginnering Units	High Enginnering Units
: Type~Digital	Version	Tagname	Description	Port Source	Address Source
Digital	1	PMP_1_LP	Pump 1 Low Pressure	OPC-Server-1	100001
Digital	1	TemperatureHigh	High outlet temperature	HVAC_Bacnet	Binary Input.0.Present Value
: Type~Digital-Host	Version	Tagname	Description	Enginnering Units	Contact Close
: Type~Analog-Pointer-Host	Version	Tagname	Description	Inital Index	Pointer Count
: Type~Digital-Pointer-Host	Version	Tagname	Description	Inital Index	Pointer Count

File

Enter the destination file name. Use the edit button as needed to select a file and path. The file extension will automatically be added when the export button is selected.

CSV - Comma Separated Values
XLS - Excel Spreadsheet
TXT - Tab Separated Values

Export Type

Select how the data is to be exported. (Excel does not need to be installed to export to an Excel spreadsheet.)

Overwrite File

If a file with the same name as entered is detected it will be deleted before the data is exported if this checkbox is checked. If it is not checked a dialog will be displayed asking if the file should be overwritten. If "No" is selected the export operation will not proceed.

Export

Select the export button to export the data in the grid.

Notes:
Each point type (analog, digital, analog host, etc.) has a header row that defines the columns for the point type.

The points are grouped after the header row for that point type.

The header rows are always exported.

Some point types may be configured with an embedded script. The script may contain characters that interfere with parsing of the exported file. The scripts are exported as HEX codes in ASCII format. Example: 36C6F7365643A3D5265616456616C75652

Do not change any of the characters in this field.

Excel does not need to be installed to export to XLS.

The pointer type points can contain up to 5000 references. This exceeds the column limit of some spreadsheet programs. The pointer tagnames and pointer item number are grouped into two cells per pointer type point

The pointer type points contain one cell per row to hold all the pointer tagnames and one cell to contain all pointer item numbers. Both cells must begin and end with a quote (") character. The pointers are separated by a comma (,).

The format of the tagname cell is:

"dfPointer1tagname=<tagname name 1>,dfPointer2tagname=<tagname name 2>,dfPointerNtagname=<tagname name n>"

Each tagname must have the "dfPointerNtagname=" berfore the tagname. The number is the tagname index in the point.

The format of the item number cell is:

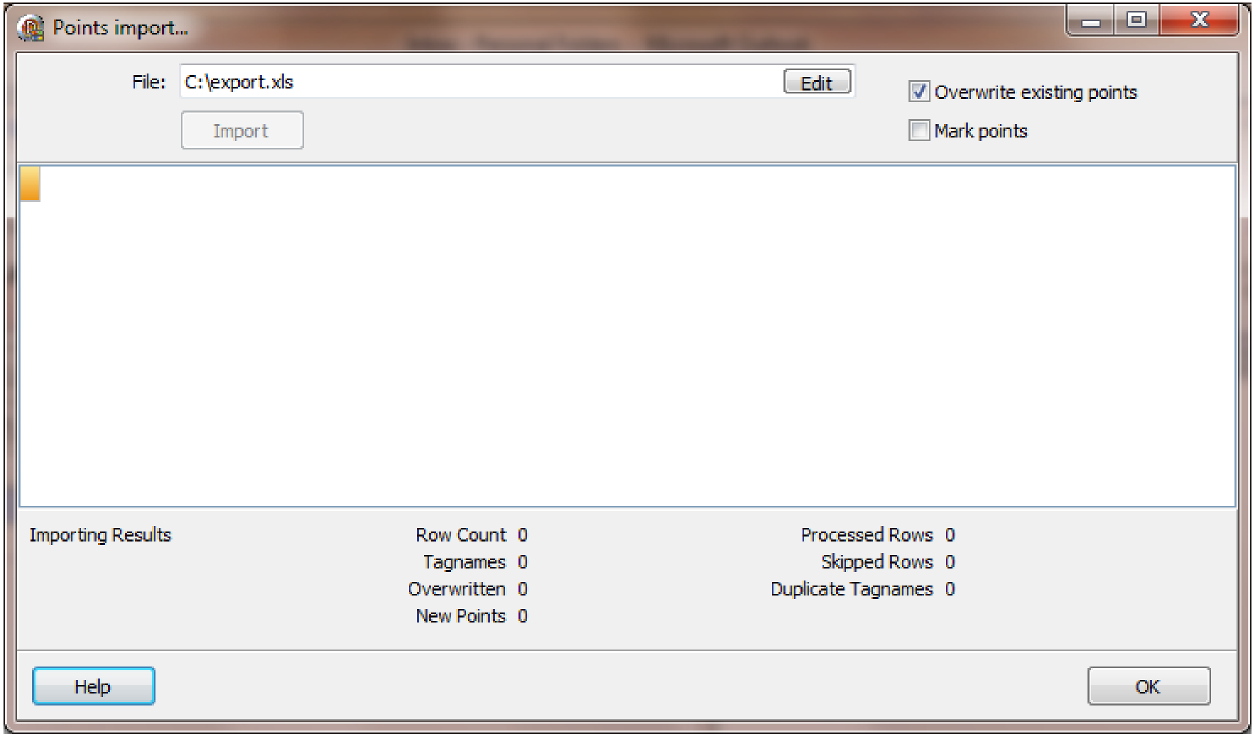
"dfPointer1item=<item 1>,dfPointer2item=<item 2>,dfPointerNitem=<item n>"

Each item must have the "dfPointerNitem=" before the item. The number is the item index in the point.

Only those indexes configured are exported.

IMPORT

The points can be imported from a tab delimited, comma separated values or XLS (MS Excel) file.



File: C:\export.xls

☑ Overwrite existing points

☐ Mark points

Importing Results

Row Count 0
Tagnames 0
Overwritten 0
New Points 0
Processed Rows 0
Skipped Rows 0
Duplicate Tagnames 0

When the "Import" button is selected an attempt to import the last file to the grid is performed. If the file load failed the grid will be empty and the "Import" button on this window will be disabled.

File

Enter the input file name. Use the edit button as needed to select the file and path. The file extension will automatically determine the format of the file. Once the file is selected an attempt to import the contents to the grid will be performed. If the gird has data select the import button to attempt to import the data to the project database.
CSV - Comma Separated Values
XLS - Excel Spreadsheet
TXT - Tab Separated Values

Overwrite existing points

When importing the rows of the file if a point tagname is imported and the point tagname is in the database the point in the database will be deleted and the imported point will be added if this checkbox is enabled. If this checkbox is not enabled the imported point will be discarded and the point in the database will not be changed.

Mark points

The imported points will be marked for display. When the point is viewed in the "Points configuration" window the point text color will be "red" and "bold" until the point is displayed in the "Point configuration" window. If the points are existing and are overwritten the points are not "marked."

Import Button

When the grid has been filed select the import button and an attempt to import the points will be performed. If errors are detected a window will be displayed indicating the row number, tagname and error message.

Importing Results

Row Count

The number of rows imported to the grid.

Tagnames

The number of points successfully imported.

Overwritten

If overwrite is enabled, the number if points overwritten with data from the import file.

New Points

The number of new points created from tagnames not present in the project tagname data base.

Processed Rows

The number of grid rows processed.

Skipped Rows

The number of gird rows skipped because the first character was a colon ':' or the first column of the row as blank.

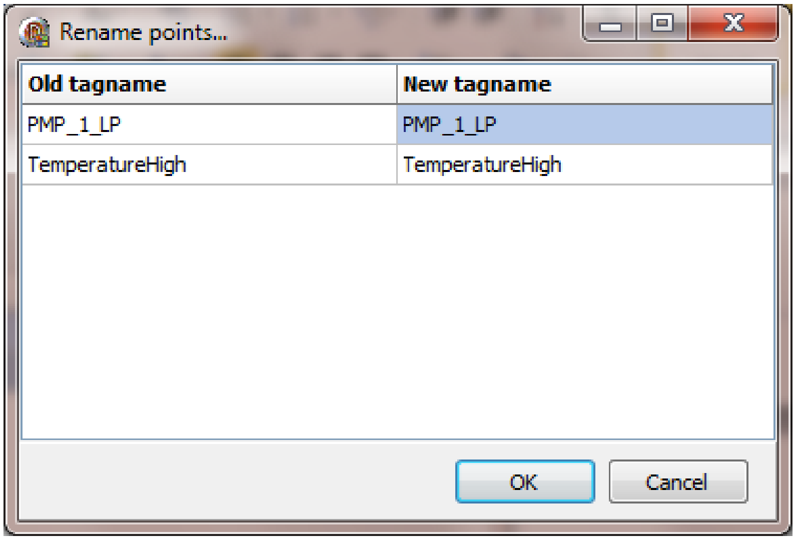
Duplicate Tagnames

If overwrite is not enabled, the number of rows that contained a tagname that is present in the project database and the row was discarded.

Notes:
A row that begins with a ":" character or a blank cell is ignored.
Excel does not need to be installed to import from an XLS file. Excel 2007 file format is not supported at present.
The importing of points does not perform extensive error checking. It is much like the points editor. For example in the point editor a "port" source can be entered that does not exist. This is permitted because the port may be created at a later time and the runtime engine would disregard any points that are not valid. Another example is the address source field. The address is not validated until runtime. This permits the creation of points that are known to be needed but the address is not defined when the point is created.

Rename Button

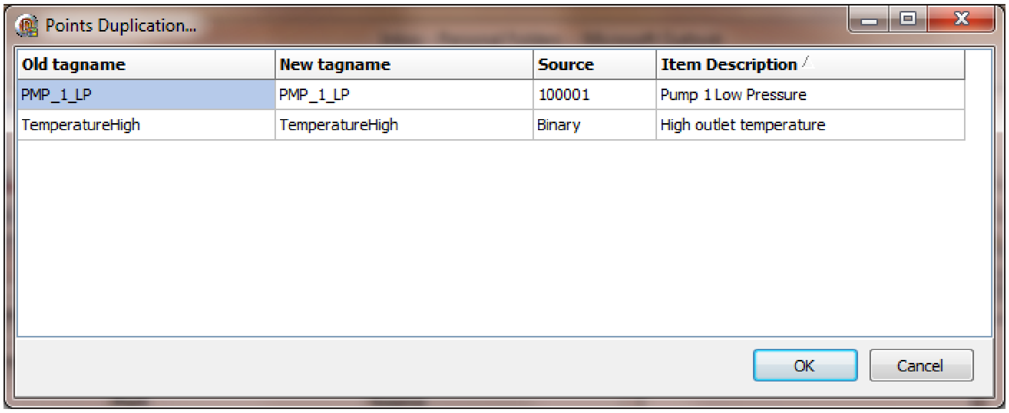
The rename dialog can be a fast method to rename one or more points without opening the point editor.


Rename points...
OK
Cancel

Old tagname	New tagname
PMP_1_LP	PMP_1_LP
TemperatureHigh	TemperatureHigh

Point duplicate Button

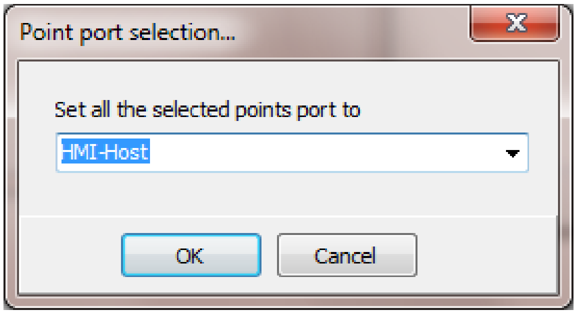
A point or many points can be duplicated with the “Duplicate” button. The tagname must be changed and the source address can be changed.


Points Duplication...
OK
Cancel

Old tagname	New tagname	Source	Item Description
PMP_1_LP	PMP_1_LP	100001	Pump 1 Low Pressure
TemperatureHigh	TemperatureHigh	Binary	High outlet temperature

Port button

The “Port” button is a fast method to change the assigned port for one or many points.

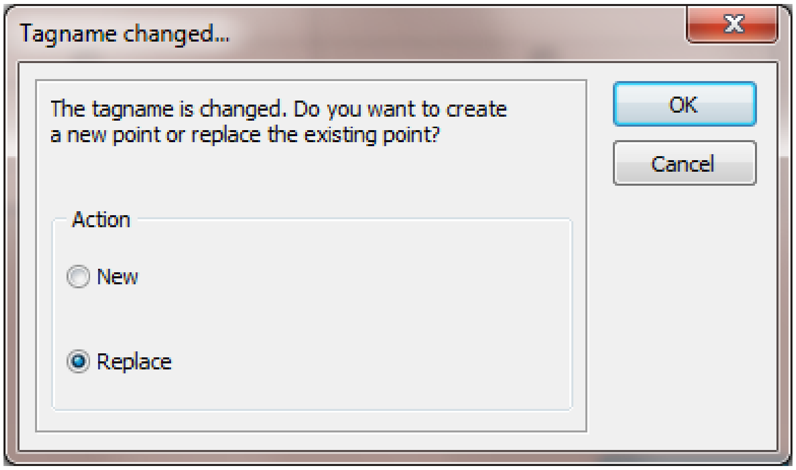

Point port selection...
OK
Cancel

Set all the selected points port to

HMI-Host

TAGNAME CHANGE

When the “OK” button is selected in the point editor and the tagname field does not match the tagname field when the dialog was opened the “Tagname changed” dialog is displayed.


Tagname changed...
OK
Cancel
Action

The tagname is changed. Do you want to create a new point or replace the existing point?

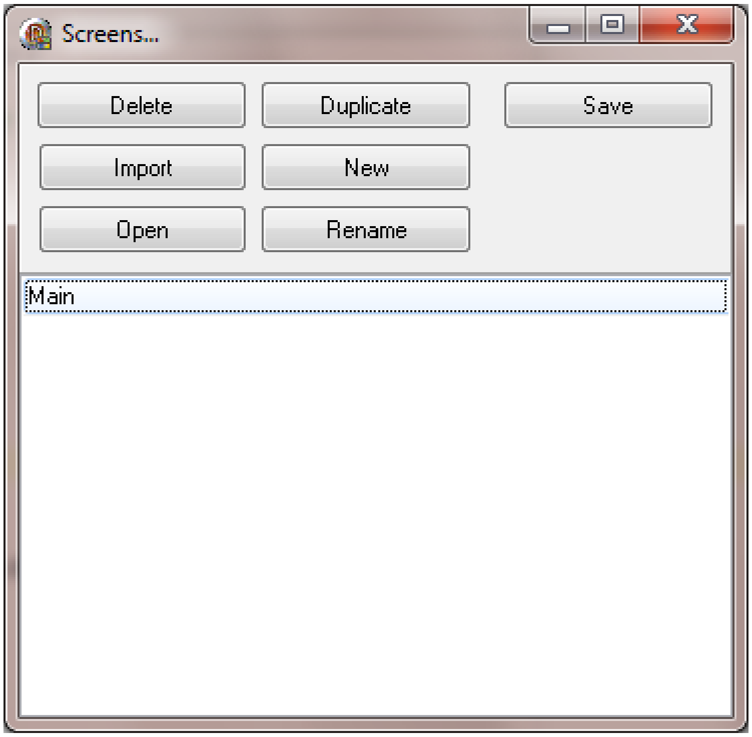
○ New

● Replace

GRAPHICS

Graphics can be simple or complex. There are many built in complex objects. The simple drawing elements, i.e. lines, circles, rectangles, are all supported with fill colors, gradients, rotation, etc.

Each screen must have a unique name.



Delete

This deletes the selected screens.

Duplicate

This duplicates the selected screen. A prompt for a screen name will be displayed.

Import

This imports an HMI graphic screen; for example, from another project.

New

This creates and opens a new screen in the screen editor after the name prompt is displayed. Each screen must have a unique name.

Open

This opens the selected screen or screens in the editor. Double clicking the screen name will also open the screen editor

Rename

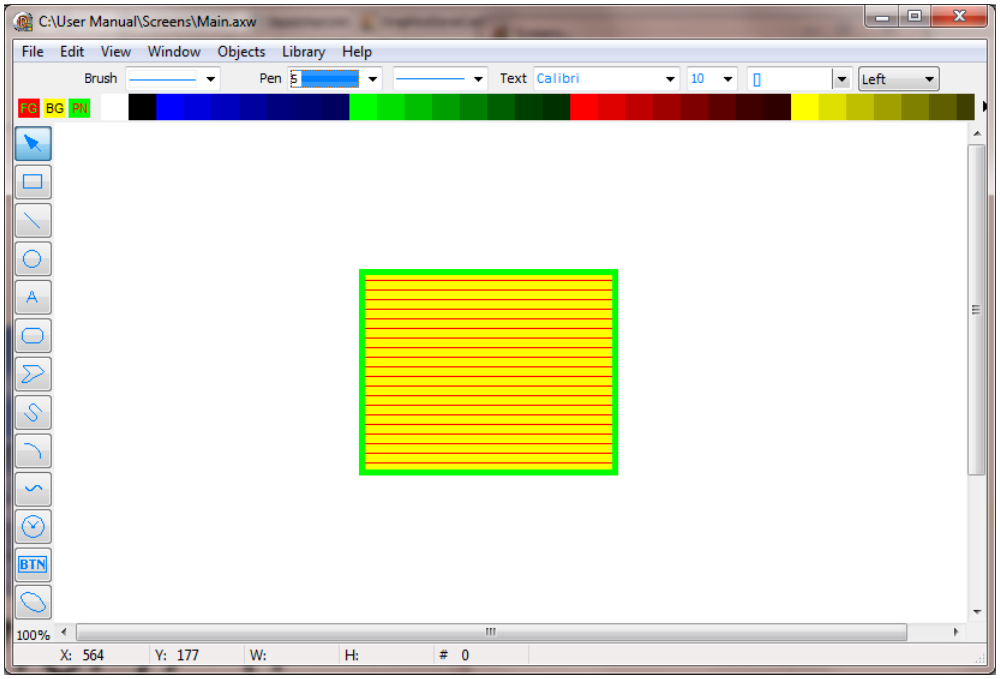
This is used to “rename” a screen.

Save

This is used to “save” all open screens and other shared screen resources.

EDITOR

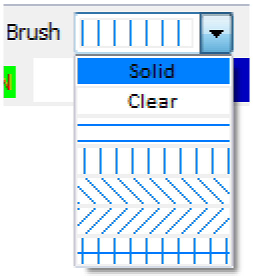
This is the graphics editor window. First all the controls of the window will be covered, the drawing tools, the menu items, and animations.


C:\User Manual\Screens\Main.axw
File
Edit
View
Window
Objects
Library
Help
Brush
Pen
5
Text
Calibri
10
Left
FG
BG
PN
BTN
100%
X: 564
Y: 177
W:
H:
# 0

When discussing the brush style, pen width, foreground color, background color, pen color and pen style we will refer to the rectangle in the image above.

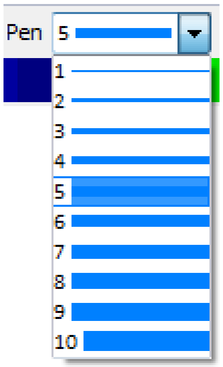
Foreground color	Red
Background color	Yellow
Pen color	Green
Pen style	Solid
Brush style	Horizontal
Pen width	5

Brush



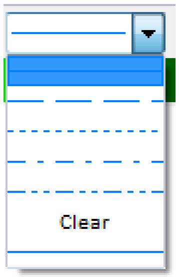
A brush is a pattern applied in the interior if an object. When a brush is applied to the graphic element the foreground and background colors are applicable.
If the brush style is “Solid”, only the foreground color is applied.
If the brush style is “Clear”, neither color is applicable.
All other brush styles; the foreground color is applied to the lines or pattern and the background color is the filler.

Pen width



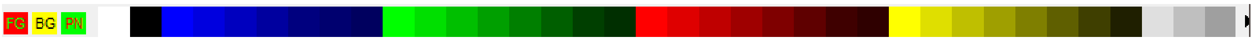
The pen width is set to 5.

Pen style



The pen style is solid. The pen style can only be applied when the pen width is one (1).

COLOR BAR



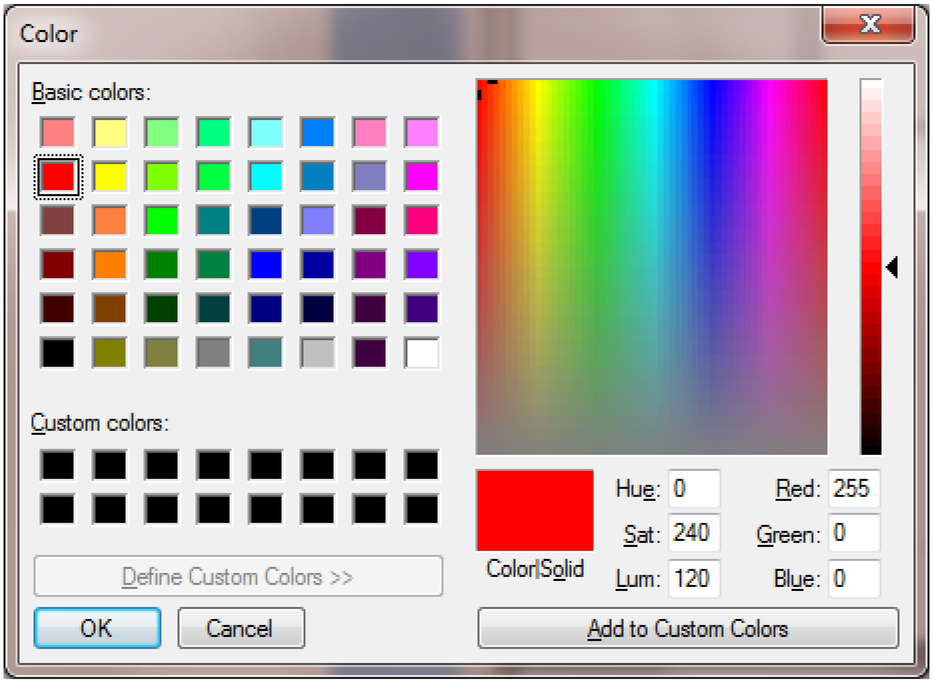
The above is the color bar.

The three colored rectangles on the left serve two purposes.

FG	Foreground color
BG	Background color
PN	Pen color

1) When a graphic element is selected the colors of the rectangles will be the colors of the graphic element.
2) A left click in a rectangle will display the custom color dialog, changing the color of all selected graphic elements.

   Custom color dialog


Color
Basic colors:
Custom colors:
Define Custom Colors >>
OK
Cancel
Color|Solid
Add to Custom Colors

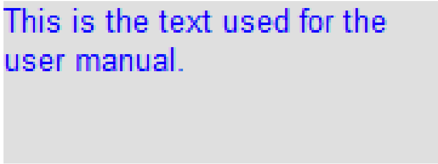
Hue: 0
Sat: 240
Lum: 120
Red: 255
Green: 0
Blue: 0

The color bar responds to mouse clicks.
When a graphic element is selected:

Left click	Foreground color
Right click	Background color
Middle click	Pen color

Holding down the “CTRL” key and left clicking a color in the color bar will display the custom color dialog allowing the color in the selected position to be set.

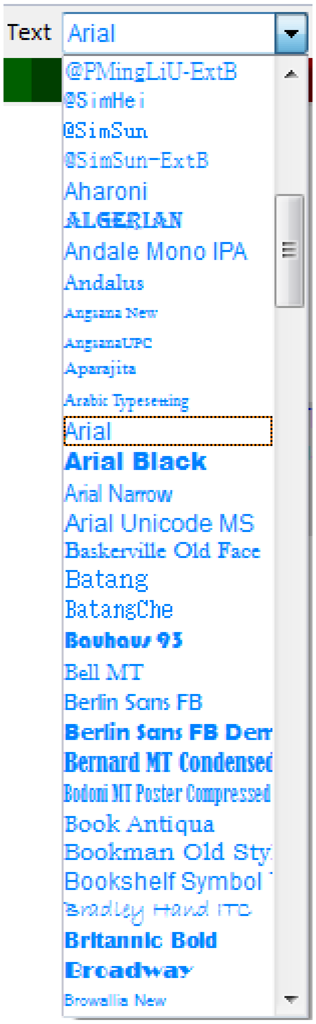
TEXT SETTINGS



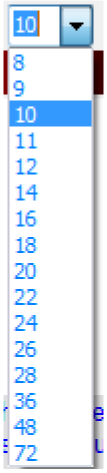
This is the text used for the user manual.

The brush style, foreground color and background color also apply to text elements. The foreground color is blue, the brush style is “Solid” and the background color is grey.

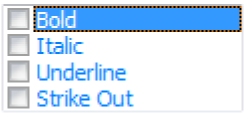
Text font


Text
Arial
@PMingLiU-ExtB
@SimHei
@SimSun
@SimSun-ExtB
Aharoni
ALGERIAN
Andale Mono IPA
Andalus
Angsana New
AngsanaUPC
Aparajita
Arabic Typesetting
Arial
Arial Black
Arial Narrow
Arial Unicode MS
Baskerville Old Face
Batang
BatangChe
Bauhaus 93
Bell MT
Berlin Sans FB
Berlin Sans FB Dem
Bernard MT Condensed
Bodoni MT Poster Compressed
Book Antiqua
Bookman Old Sty
Bookshelf Symbol
Bradley Hand ITC
Britannic Bold
Broadway
Browallia New

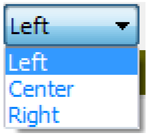
Text size


10
8
9
10
11
12
14
16
18
20
22
24
26
28
36
48
72

Text style


☐ Bold
☐ Italic
☐ Underline
☐ Strike Out

Text alignment


Left
Left
Center
Right

TOOL BAR

SELECTION TOOL

Use the arrow tool to select, resize, move, etc. graphic elements. Double clicking an object will display the animation dialog.
Holding down the "SHIFT" key while clicking the left mouse button on a graphic element will toggle the elements "selected" state.
Dragging a selection box around elements will add the elements to the selected list. If the "SHIFT" key is down it will toggle the elements "selected" state.

RECTANGLE TOOL

This tool creates a rectangle. Press the left mouse button while the arrow is in the window drawing area and move the mouse, release the mouse button. A rectangle will be created and the size will be determined when the mouse button is released. Hold down the "SHIFT" key to force the sides to be equal length.

LINE TOOL

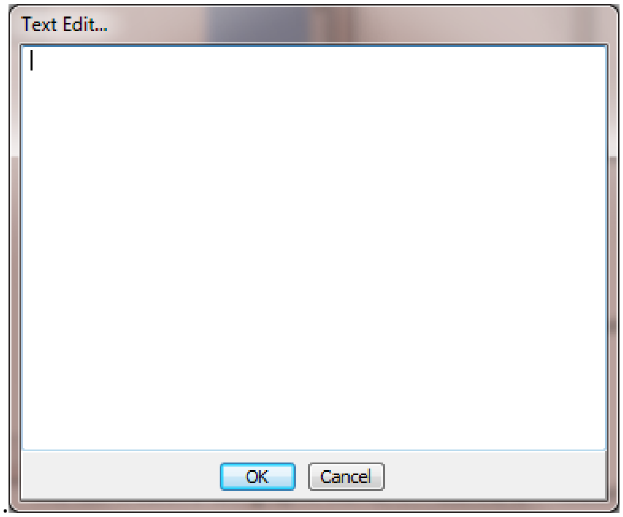
This tool creates a line. Press the left mouse button while the arrow is in the window drawing area and move the mouse, release the mouse button. A line will be created and the length will be determined when the mouse button is released. Hold down the "SHIFT" key to force the line to draw at "45" degree angles. Select the 'Edit' menu item to configure the arrow settings.

CIRCLE TOOL

This tool creates a circle. Press the left mouse button while the arrow is in the window drawing area and move the mouse, release the mouse button.   A circle will be created and the size will be determined when the mouse button is released. Hold down the "SHIFT" key to force the radius to be the same at all points.

TEXT TOOL

This tool creates a text graphic element. Press the left mouse button while the arrow is in the window drawing area and move the mouse, release the mouse button. A rectangle will be created and the size will be determined when the mouse button is released. This is the bounding rectangle for the text. When the mouse button is released a dialog will appear to allow entry of the text.



ROUND RECTANGLE TOOL

This tool creates a round rectangle. Press the left mouse button while the arrow is in the window drawing area and move the mouse, release the mouse button. A rectangle with rounded corners will be created and the size will be determined when the mouse button is released. Hold down the "SHIFT" key to force the sides to be equal length.

POLYLINE TOOL

This tool creates a round polyline. A polyline is a one or more straight lines drawn as a single object. A line has two end points.

Press and release the left mouse button while the arrow is in the window drawing area. A line will be created with one end point where the mouse was clicked and the other line end point will be at the location of the mouse pointer. Continue to move the mouse and the line end point will follow. Press and release the left mouse button and the line end point will be set. This point now acts as the first line end point for the next line. Repeat until all the desired lines have been drawn. To end double click the left mouse button or press the "ESC" key.

Hold down the "SHIFT" key to force the line to draw at "45" degree angles.

POLYLINE, FREEHAND TOOL

A freehand polyline is a group of lines used to draw irregular shapes.
Press and hold the left mouse button while moving the mouse in the drawing area. When the left mouse button is released the object creation is complete.

ARC/WEDGE TOOL

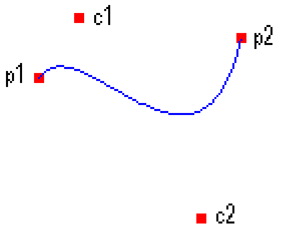
Press the left mouse button while the arrow is in the window drawing area and move the mouse, release the mouse button. An arc will be created and the size will be determined when the mouse button is released. Hold down the "SHIFT" key to force the sides to be equal length. The default arc starts at 0° and ends at 90°. It can be adjusted via the menu Objects/Arc menu.

BEZIER TOOL

Press and release the left mouse button while the arrow is in the window drawing area. A line will be created with one end point where the mouse was clicked and the other line end point will be at the location of the mouse pointer. Continue to move the mouse and the line end point will follow. Press and release the left mouse button and the line end point will be set. This point now acts as the first line end point for the next line. Repeat until at least three line segments have been drawn. To end double click the left mouse button or press the "ESC" key.

Hold down the "SHIFT" key to force the line to draw at "45" degree angles.

A Bezier spline is a curve specified by four points: two end points (p1 and p2) and two control points (c1 and c2). The curve begins at p1 and ends at p2. The curve doesn't pass through the control points, but the control points act as magnets, pulling the curve in certain directions and influencing the way the curve bends. The following illustration shows a Bezier curve along with its endpoints and control points.



Note that the curve starts at p1 and moves toward the control point c1. The tangent line to the curve at p1 is the line drawn from p1 to c1. Also note that the tangent line at the endpoint p2 is the line drawn from c2 to p2.
The line can contain multiple Bezier line segments. The last point of each line serves as the first point of the next line. The first segment would have 4 points and all subsequent segments contain 3 points.

COMPLEX OBJECT TOOL

Press and release the left mouse button in the drawing area and the complex object selection dialog box will be displayed. The complex objects are covered later in the manual.

BUTTON TOOL

Press and release the left mouse button in the drawing area and the button object selection dialog box will be displayed. The button objects are covered later in the manual.

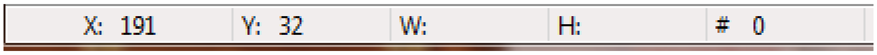
ELLIPSE TOOL

This tool creates an ellipse circle. Press the left mouse button while the arrow is in the window drawing area and move the mouse, release the mouse button. An ellipse will be created and the size will be determined when the mouse button is released.

ZOOM/SCALING

The drawing area can be zoomed and this displays the amount of zoom.
100% = no zoom/ 0 scaling.
Using the left mouse button, click in the area and the drawing area will zoom in, area larger.
Using the right mouse button, click in the area and the drawing area will zoom out, area smaller.

Status bar



X: 191 Y: 32 W: H: # 0

The status bar is at the bottom of the window. It can be hidden in the “Settings/Window settings” dialog.

When no object is selected;
The X value is the mouse horizontal position, 0 (zero) is the left side.
The Y value is the vertical position, 0 (zero) is the top.
When one object is selected:
The X is the left position of the object.
The Y is the top position of the object.
The W and H are the width and height of the object.
When more than one object is selected:
The X is the leftmost position of the objects.
The Y is the topmost position of the objects.
The W and H are the total width and height of the objects. All these add up to the “bounding” rectangle.

The “#” displays how many (count) objects are selected.

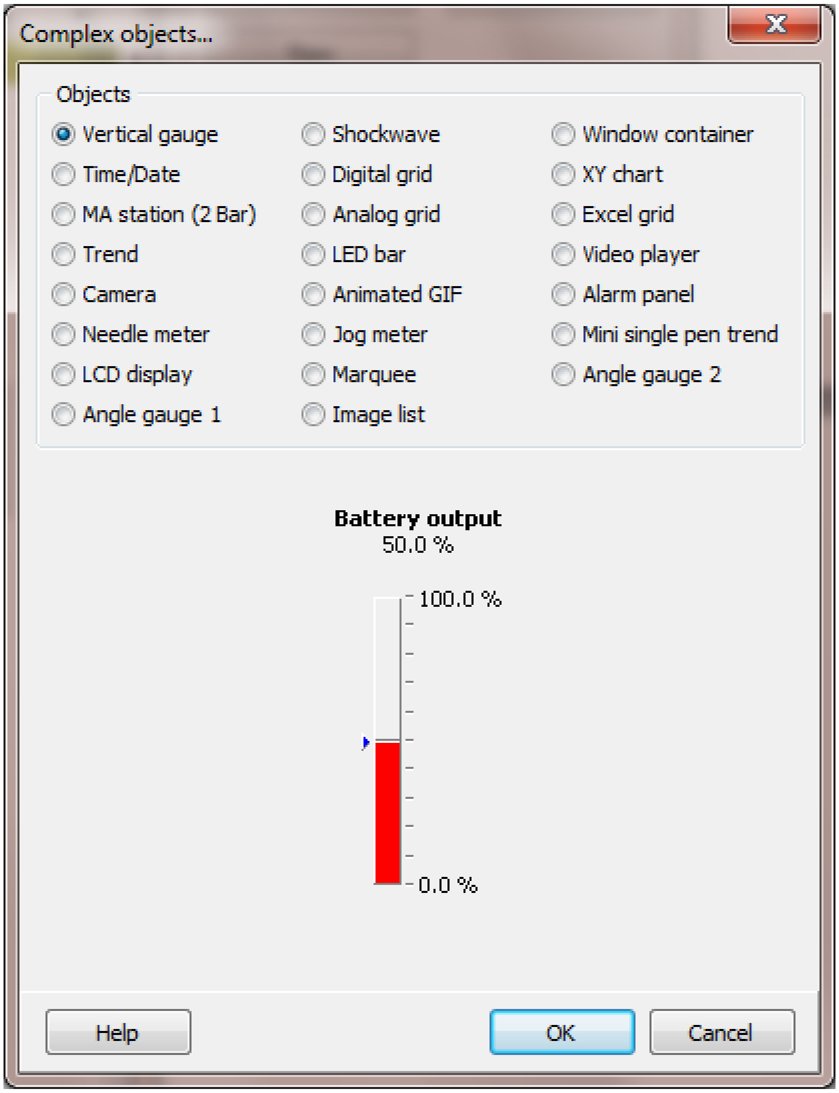
DRAG & DROP

The graphic editor support drag and drop for external files. The file types supported are:

PNG	Portable Network Graphics
GIF	Graphics Interchange Format
JPG/JPEG	Joint Photographic Experts Group
WMF/EMF	Windows Meta File/ Enhanced Metafiles
BMP	Bitmap Image File
ICO	Icon

The file name extension is used to determine the file type. The clipboard can continue to be used to import graphics. The nature of WMF/EMF files might require a particular file to be imported via the clipboard.

COMPLEX OBJECTS


Complex objects...
Objects
Battery output
50.0 %
100.0 %
0.0 %
Help
OK
Cancel

● Vertical gauge
○ Time/Date
○ MA station (2 Bar)
○ Trend
○ Camera
○ Needle meter
○ LCD display
○ Angle gauge 1
○ Shockwave
○ Digital grid
○ Analog grid
○ LED bar
○ Animated GIF
○ Jog meter
○ Marquee
○ Image list
○ Window container
○ XY chart
○ Excel grid
○ Video player
○ Alarm panel
○ Mini single pen trend
○ Angle gauge 2

The complex objects are listed below in alphabetical order.

ALARM PANEL

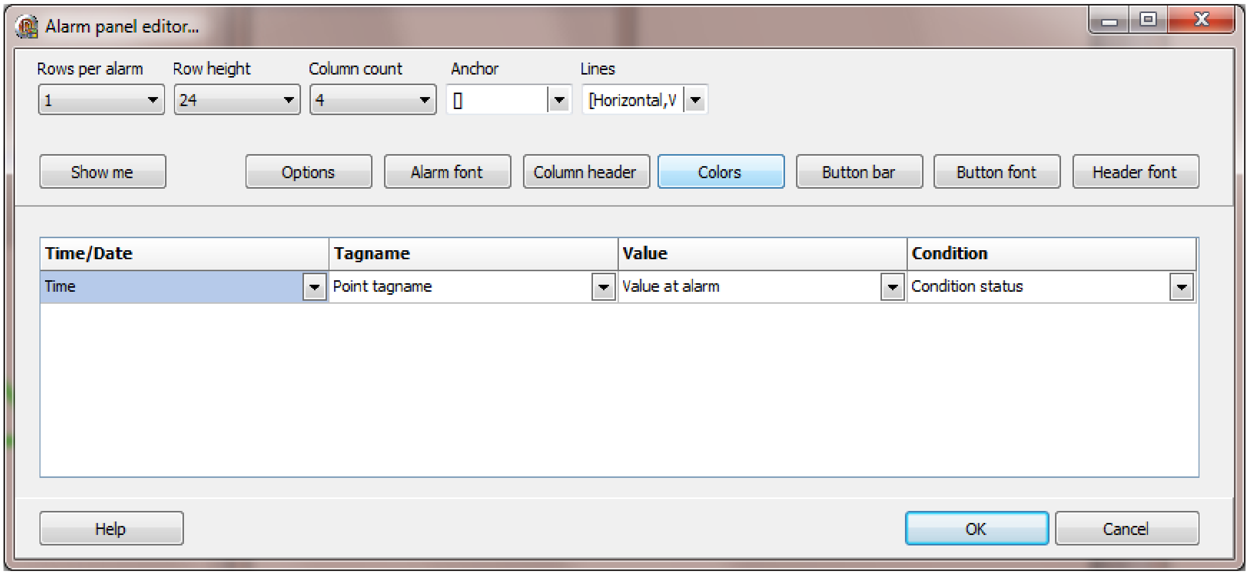
This graphic element is used to create a custom active alarms list if the built-in active alarms window is not suitable. You can also use the animation 'System variable' to display selected alarm information.

Note: The 'Show me' button increases the window width to the sum of the column widths if the window width will not display all the columns. The graphic element does not automatically size. Set the size of the graphic element to the desired width.

Any unused area of the panel will be the foreground color.

The alarm panel editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.

Alarm panel editor

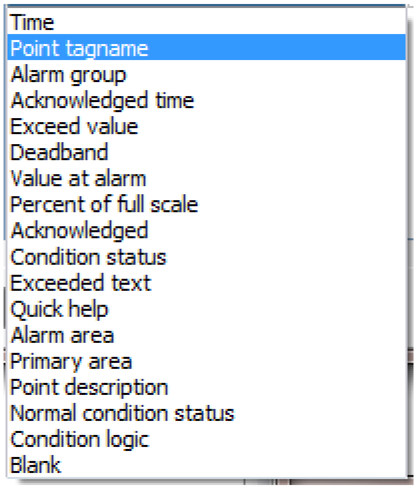

Alarm panel editor...
Show me
Options
Alarm font
Column header
Colors
Button bar
Button font
Header font
Help
OK
Cancel

Rows per alarm: 1
Row height: 24
Column count: 4
Anchor: ▯
Lines: [Horizontal,V

Time/Date	Tagname	Value	Condition
Time	Point tagname	Value at alarm	Condition status

The 'Show me' button displays some of the fields of an alarm. Its purpose is to show an example of how the panel will appear at runtime.

Each column can display the property of a point.


Time
Point tagname
Alarm group
Acknowledged time
Exceed value
Deadband
Value at alarm
Percent of full scale
Acknowledged
Condition status
Exceeded text
Quick help
Alarm area
Primary area
Point description
Normal condition status
Condition logic
Blank

Rows per alarm

Each alarm has many fields and the number of fields to display might not fit in the space allocated. Each active alarm use 1 to 4 rows to display the fields selected.

Row height

The height of each row.

Column

The number of columns per row.

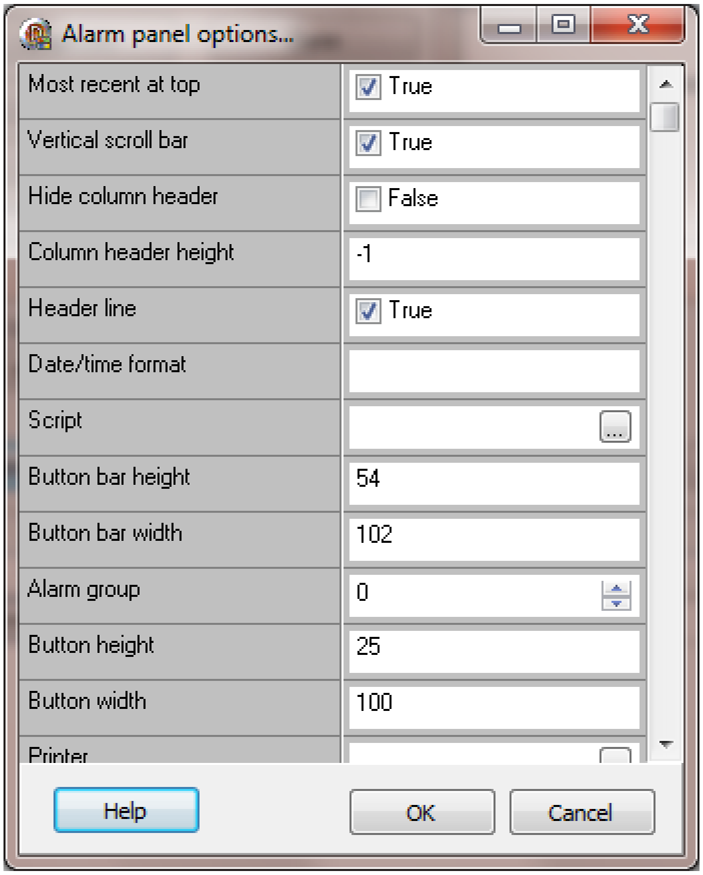
Anchor

The alarm panel element can be anchored (locked) to the any or all four sides of the window. See margins.

Lines

Border	around the panel
Horizontal	between each column
Vertical	between each row

Options



Most recent at top	☑ True
Vertical scroll bar	☑ True
Hide column header	☐ False
Column header height	-1
Header line	☑ True
Date/time format	
Script	
Button bar height	54
Button bar width	102
Alarm group	0
Button height	25
Button width	100
Printer	

Most recent at top

The alarms will be listed with the most recent alarm at the top of the panel

Vertical scroll bar

If there are more alarms than can be displayed in the panel area a scroll bar will be displayed.

Hide column header

If enabled the header column will not be displayed.

Column header height

If the column header is not hidden, the height of the column header. If less than 1 the header will be the same height as the row height.

Header line

If enabled a line will be drawn between the header and the first row.

Date/time format

The format of the date/time field. A blank field uses the operation system configuration.

Script

If the button bar is enabled and the 'Execute script' button is enabled, this is the script that will be executed.

Button bar height

The height of the button bar if the 'bar position' is top or bottom.

Button bar width

The width of the button bar if the 'bar position' is left or right.

Alarm group

Select the alarm group to display. If this field is '0' (zero), 'All' alarm groups will be displayed.

Button height

The height of each button. Default = 25

Button width

The width of each button. Default = 75

Printer

The printer to print the alarms if one of the below print buttons is selected.

Save path

The path to save the file if the 'Save' button is selected.

Save name

The script global containing the file name if the 'Save' button is selected. The file format is RTF (Rich Text Format).

Note:
1) If the 'Save path' is blank the 'Save name' must be a fully qualified path.
2) If the script global does not exist or the file name is invalid, the save command will fail and an entry will be placed in the event log.
3) If a file exists at the path with the same name it will be overwritten.

Log all button actions

If enabled and one of the buttons is selected an entry will be placed in the event log.

Alternate shading

If enabled the background of each alarm section will be lighten or darkened.

Use alarm colors

If enabled the background of each alarm section will be the color selected for the alarm type. Other background color settings are ignored.

User level

The user level required to initiate button actions.

Blank acknowledge time

Unacknowledged alarms have a year of 1899 in the 'Acknowledge time' field. If enabled, the field will be blank if the alarm has not been acknowledged.

Left, top, right, bottom margin

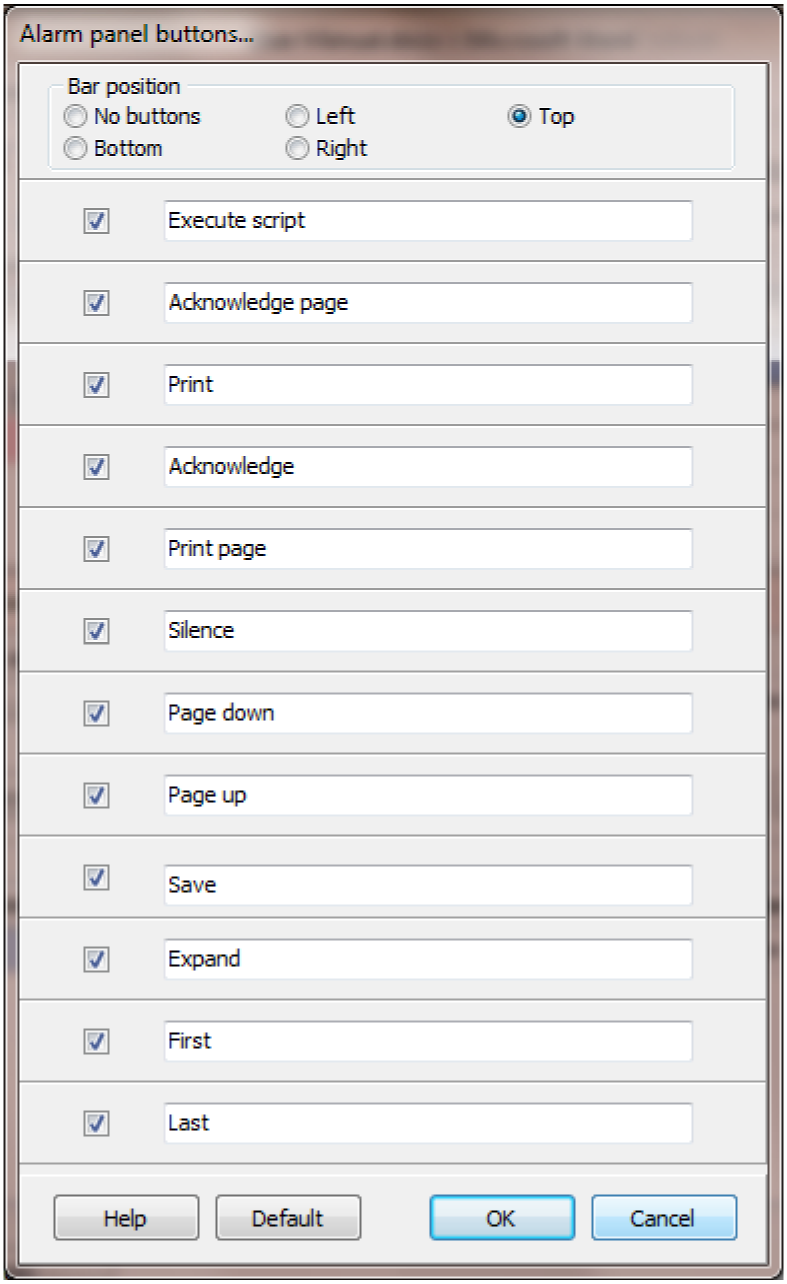
When an anchor is enabled it 'locks' to a window side (top, left, bottom, right). If the margin value for the side is greater than 0 (> 0), the alarm panel side is locked to the side plus or minus the margin value.

For example, if all the anchors are set and the top margin is 20 the alarm panel will be flush will all the sides except the top. The top of the alarm panel will be 20 pixels from the top of the window.

Digital value display

The value of a digital point is 0 or 1 (true/false) when the alarm condition (falling/rising) is satisfied. By default, the "value at alarm" is displayed as a 0 or 1. This field allows for one of the digital alarm fields to be selected for display.

Alarm panel buttons



Alarm panel buttons...

Bar position

○ No buttons ○ Left ● Top

○ Bottom ○ Right

☑ Execute script

☑ Acknowledge page

☑ Print

☑ Acknowledge

☑ Print page

☑ Silence

☑ Page down

☑ Page up

☑ Save

☑ Expand

☑ First

☑ Last

Bar position

The position of the button bar in the alarm panel. The bar will be placed on the top, bottom, right, left or not displayed.

Acknowledge page

This will set the alarm 'Acknowledge state' for the points currently displayed to 'Acknowledged'. Note: This will reset the 'Alarm pulse'.

Acknowledge

This is global 'Acknowledge' command.

Silence

This is the 'Silence' command.

Page up

If the alarm list has 'paged down' or scrolled 'down' this will page up one page.

Page down

If the alarm list is not all the top, this will 'page up' one page or back to the top.

Print page

This will send the current page to the printer selected in the options, above.

Print

This will send all the alarms to the printer selected in the options, above.

Save

If the alarm list is not all the top, this will 'page up' one page or back to the top.

Execute script

The script selected above will be queued for execution.

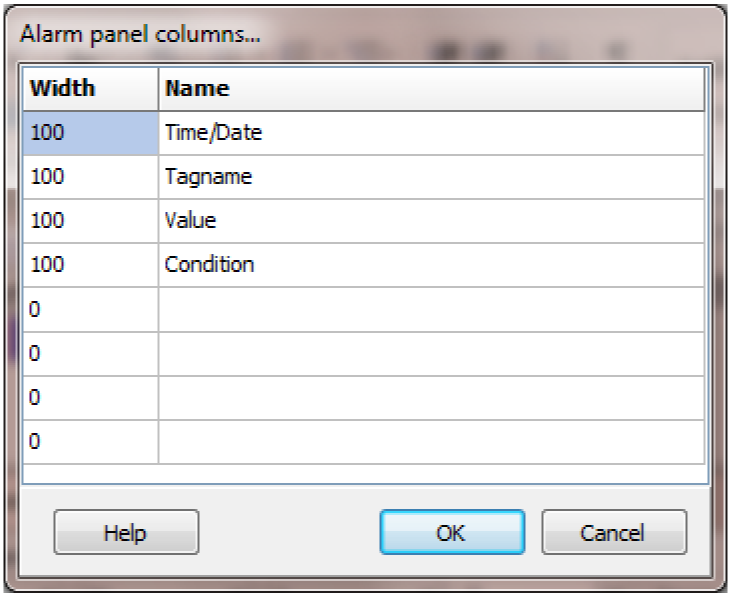
Expand

A dialog is displayed, for the selected alarm, with all the alarm fields for the point.

First/Last

The list will move to the first alarm in the list or last alarm in the list. (The list moves to the beginning or end.)

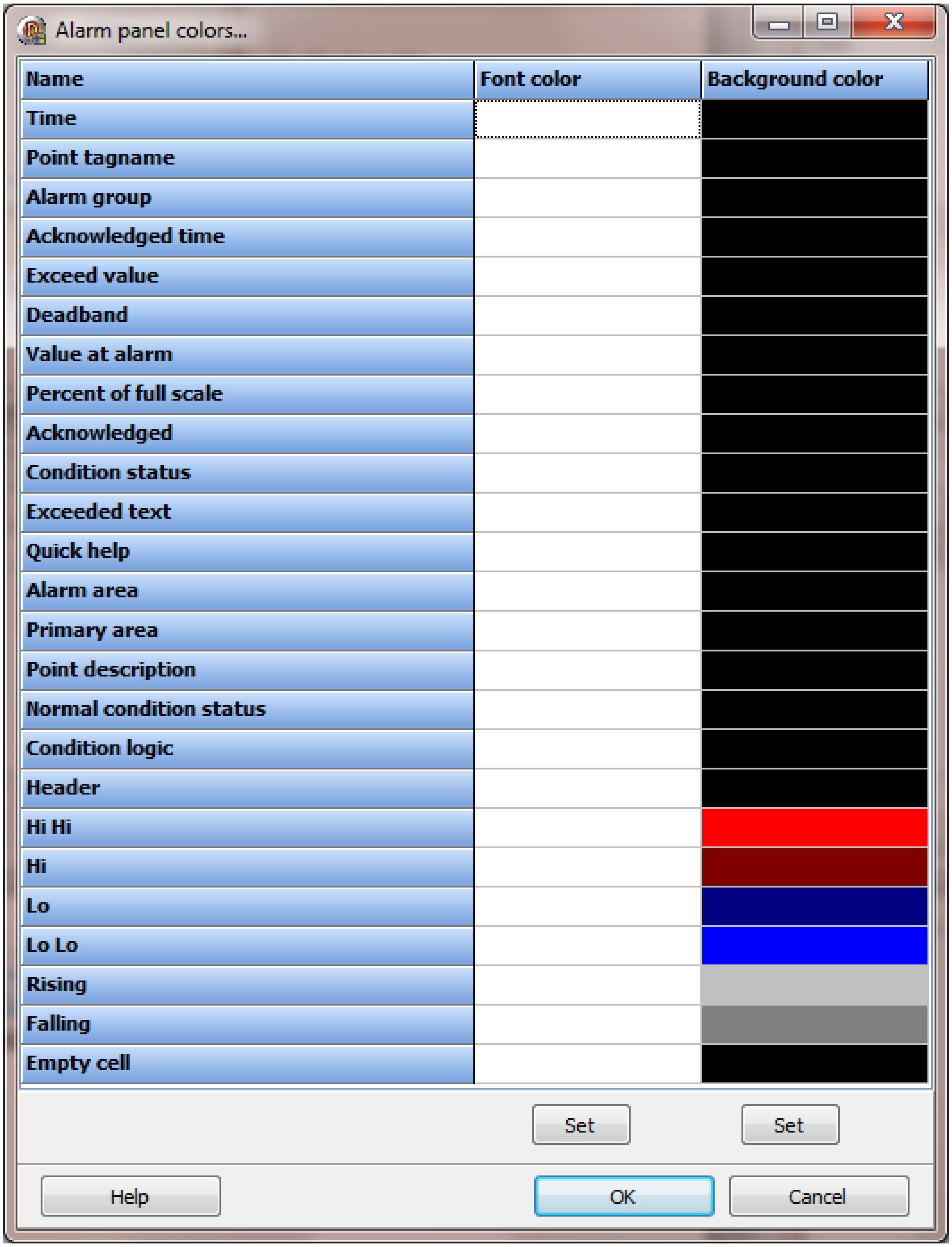
Column header editor


Alarm panel columns...

Width	Name
100	Time/Date
100	Tagname
100	Value
100	Condition
0	
0	
0	
0	

Help
OK
Cancel

Colors editor

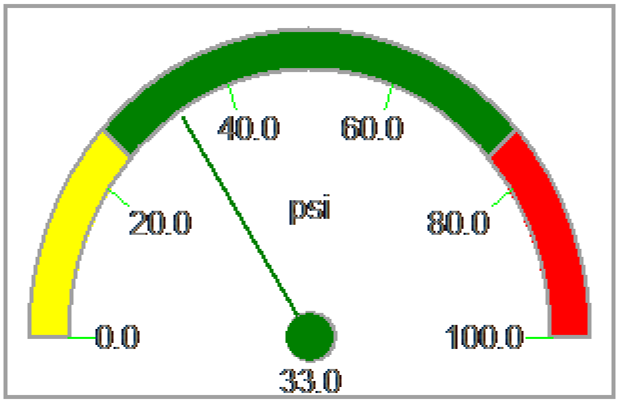

Alarm panel colors...
Set
Set
Help
OK
Cancel

Name	Font color	Background color
Time	⬜	⬛
Point tagname	⬜	⬛
Alarm group	⬜	⬛
Acknowledged time	⬜	⬛
Exceed value	⬜	⬛
Deadband	⬜	⬛
Value at alarm	⬜	⬛
Percent of full scale	⬜	⬛
Acknowledged	⬜	⬛
Condition status	⬜	⬛
Exceeded text	⬜	⬛
Quick help	⬜	⬛
Alarm area	⬜	⬛
Primary area	⬜	⬛
Point description	⬜	⬛
Normal condition status	⬜	⬛
Condition logic	⬜	⬛
Header	⬜	⬛
Hi Hi	⬜	🟥
Hi	⬜	🟥
Lo	⬜	🟦
Lo Lo	⬜	🟦
Rising	⬜	░
Falling	⬜	▒
Empty cell	⬜	⬛

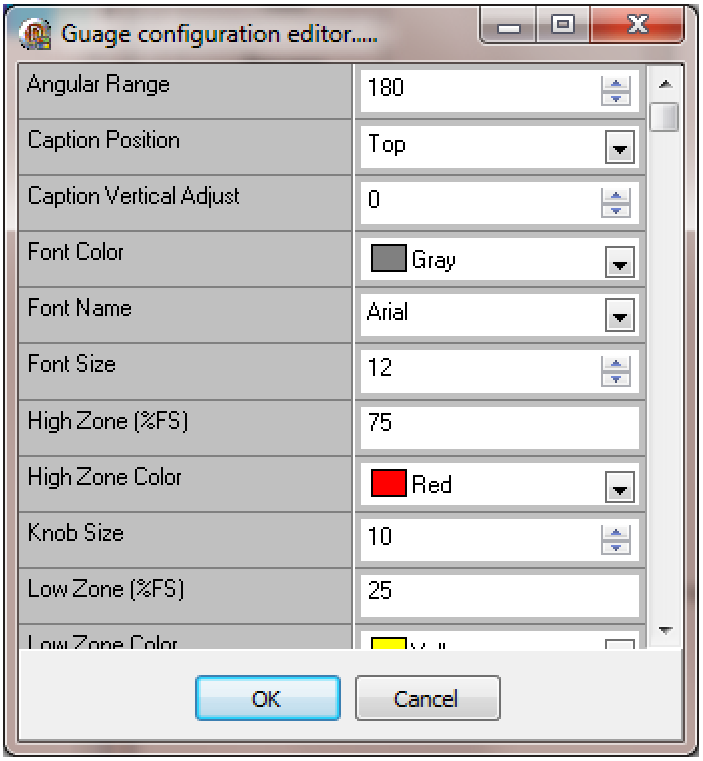
ANALOG GRID

All of the analog grid settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

ANGLE GAUGE 1


40.0
60.0
20.0
psi
80.0
0.0
100.0
33.0

The angle gauge 1 editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Guage configuration editor.....
OK
Cancel

Angular Range	180
Caption Position	Top
Caption Vertical Adjust	0
Font Color	Gray
Font Name	Arial
Font Size	12
High Zone (%FS)	75
High Zone Color	Red
Knob Size	10
Low Zone (%FS)	25
Low Zone Color	🟨

Angular Range

The arc range. The value is from 10 to 360

Caption Position

The position of the “units” text.

Caption Vertical Adjust

An offset to the vertical position of the “units” text.

Font Color

The font color for the element.

Font Name

The font type for the element.

Font Size

The size of the font for the element.

High, Low, OK Zone & Color

The color of the arc on the scale indicating the low, OK and high range and color. Set the low and high value and the range between the low and the high is the 'OK' range. Use the color setting to indicate the range.

Knob Size

The size of the circle in the middle of the gauge.

Needle Width

The width of the needle.

Show Frame

A frame is displayed around the gauge.

Show Tick Scale

Display the values for the tick marks.

Show Ticks

Display the tick marks.

Show Value

Display the value of the needle.

Show Zones

The arc is filled with the color selected for the three zones. Also see Transparent zones.

Tick Count

The number of scale ticks. 3 would put a tick at the start, the middle and the end.

Tick Digits

The number of digits to display for the tick values.

Tick Precision

The precision of the tick values displayed.

Transparent Zones

If enabled the zones are not drawn with the zone color. The arc is drawn and filled with the background color.

Units

This is the string for the caption.

Use Inherited Units

This overrides the "Units" above and uses the units from the point assigned via animation.

Use Inherited Limits

This overrides the "Value Maximum" and "Value Minimum" below and uses the engineering min/max from the point assigned via animation.

Value

The current value of the input.

Value Digits

The number of digits for the value field.

Value Maximum

The upper range of the monitored value. Used to display the scale and needle.

Value Minimum

The lower range of the monitored value. Used to display the scale and needle.

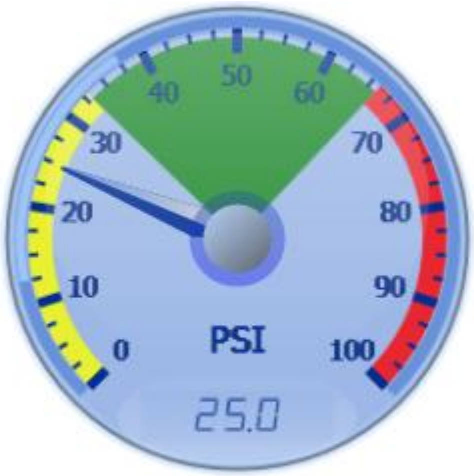
Value Precision

The precision of the value text string.

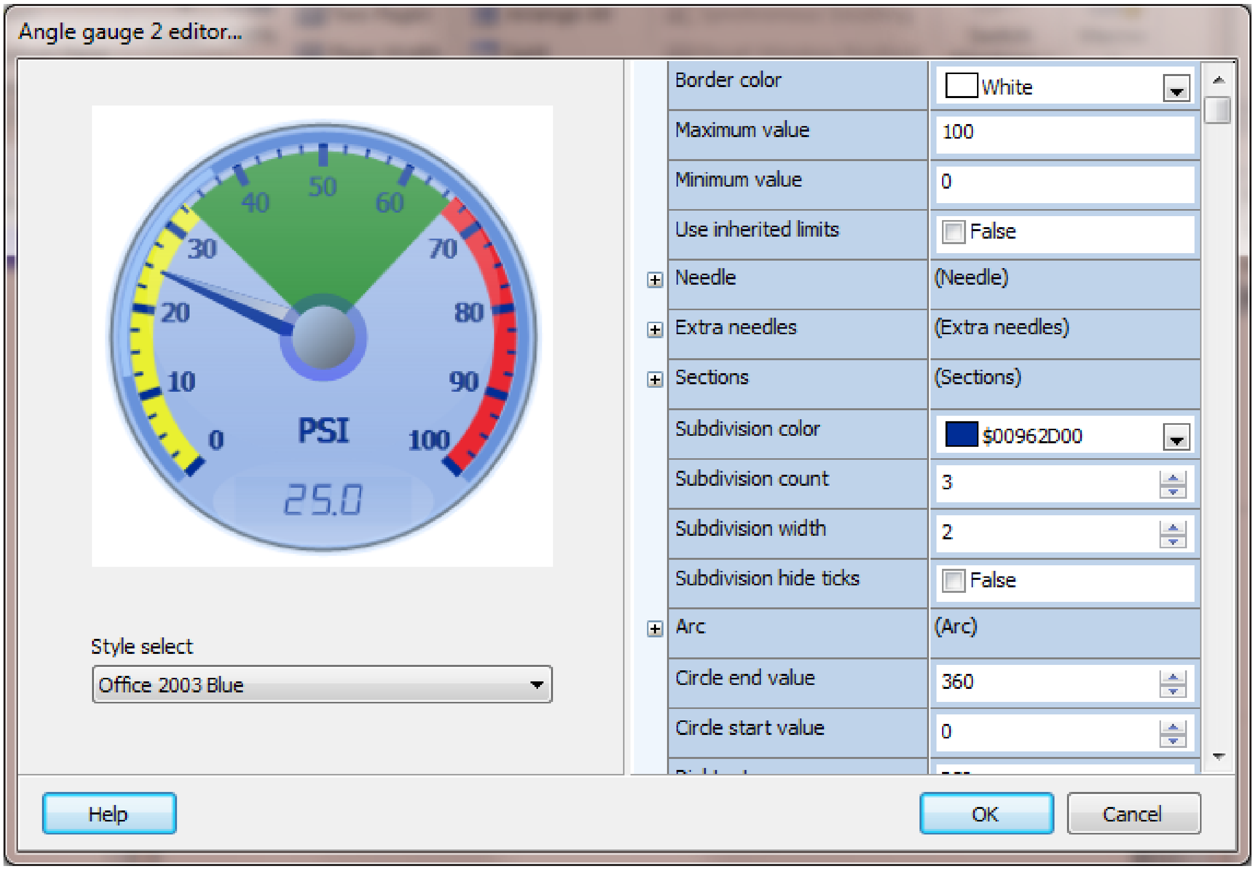
Value Vertical Adjust

An offset to the vertical position of value text.

ANGLE GAUGE 2


0
10
20
30
40
50
60
70
80
90
100
PSI
25.0

The angle gauge 2 editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Angle gauge 2 editor...
0
10
20
30
40
50
60
70
80
90
100
PSI
25.0
Help
OK
Cancel

Style select: Office 2003 Blue

Border color	White
Maximum value	100
Minimum value	0
Use inherited limits	☐ False
⊞ Needle	(Needle)
⊞ Extra needles	(Extra needles)
⊞ Sections	(Sections)
Subdivision color	$00962D00
Subdivision count	3
Subdivision width	2
Subdivision hide ticks	☐ False
⊞ Arc	(Arc)
Circle end value	360
Circle start value	0

Notes:
1) There are many color selections for this graphic element. Many of the colors operate in pairs. i.e. "Inner center color" and "Inner center color to". Not all color properties are listed in this help file. Use the configuration editor to change colors and view the effect of the color.
2) Opacity is the "blending" or "transparency" of a color/object and what is below the object. A value of 0 is transparent (the below colors will be fully visible) and a value of 255 is opaque (the below colors will be not been seen). Not all "opacity" properties are listed in this help file. Use the configuration editor to change the opacity level and view the effect.
3) When changing values in the configuration editor the change will not be reflected in the example gauge until you click outside the item.

Border color

The color outside the circle of the gauge.

Maximum value

The upper range of the monitored value. Used to display the scale and needle.

Minimum value

The lower range of the monitored value. Used to display the scale and needle.

Use inherited limits

This overrides the "Maximum value" and "Minimum value" above and uses the engineering min/max from the point assigned via animation. If enabled the limits are collected from the source for needle 1.

Needle

This gauge can display 1 to 3 needles. Needle 1 cannot be removed. Needles 2 & 3 are optional.

The needle must be enabled to display. To see the needle position for needle 1 at design time, change the ''Value" field below.

Needle one also contains the settings for the center to circle.

If the value text is enabled, it always show the value of needle 1.

Extra needles

This gauge can display 2 additional needles.

Sections

This gauge can display 3 sections. Sections are used to show a range in the gauge. For example low, normal and high.

Subdivisions/divisions

These are the marks along the outer edge of the gauge.

Font

The font settings for the “Dial text”.

Value font

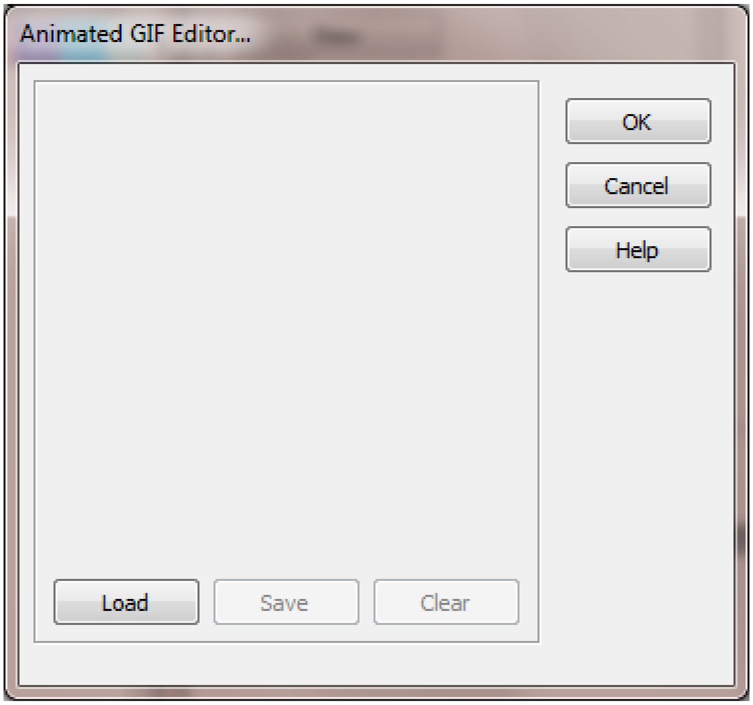
The font settings for the numbers at the division tick marks.

Select style

This sets some colors of the gauge to the style selected, when selected. All the colors of the gauge can continue to be changed regardless of selecting a style.

Note: When a selection is made and the colors are set in the gauge. The colors of the gauge are not compared to determine the style. The combo is used for selection, it is not an indicator. 'Custom' has no color settings.

ANIMATED GIF



The animated gif editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.

Note:

The animated GIF at design time has a transparent background. The animated GIF at runtime does not have a transparent background.

In configuration, the GIF will play when the element is selected. When moving the element in the window it may not display correctly until the element is unselected.

Load

Select the load button to import a graphic file.

Save

Select the save button to export the GIF.

Clear

Select the clear button to erase the image.

OK

Select the OK button to accept the settings. When the OK button is selected the element will be sized to the dimensions of the GIF. The element can then be sized as needed.

Cancel

Select the cancel button to not make any changes to the element.

DIGITAL GRID

All of the digital grid settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

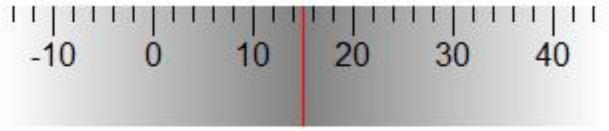
EXCEL GRID

All of the Excel grid settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

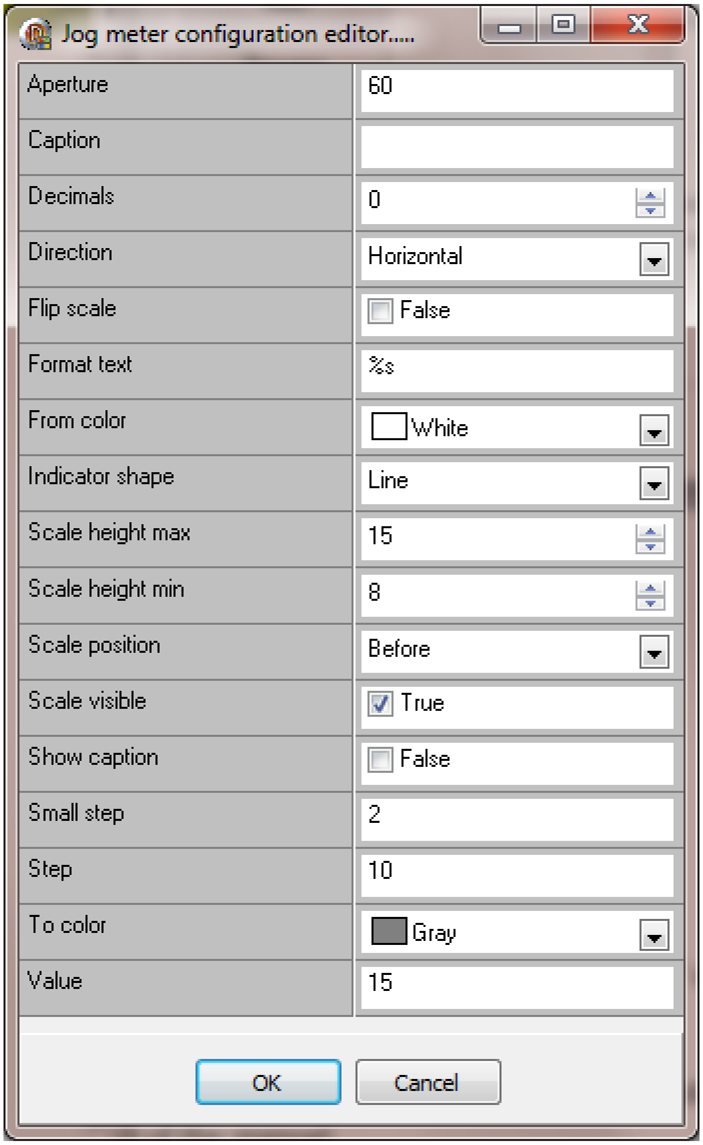
IMAGE LIST

All of the “Image list” settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

JOG METER



The “Jog” meter editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Aperture	60
Caption	
Decimals	0
Direction	Horizontal
Flip scale	☐ False
Format text	%s
From color	☐ White
Indicator shape	Line
Scale height max	15
Scale height min	8
Scale position	Before
Scale visible	☑ True
Show caption	☐ False
Small step	2
Step	10
To color	■ Gray
Value	15

Aperture

This is the displayed range of the gauge. The gauge does not have a range. It shows the value by changing the displayed scale

Caption

The text in the gauge

Decimals

The number of decimal places, if any, that are displayed on the scale.

Direction

The gauge can be horizontal or vertical.

Flip scale

Positive on the top/left or bottom/right.

Format text

%s is the default. Any text before the '%s' would be displayed before the scale values and any text after the '%s' would be displayed after the scale values.

From color, To color

The background gradient colors. For a single color set both colors to the same color.

Indicator shape

The indicator can be a triangle or a line.

Scale height max, scale height min

This is the line length for the major and minor tick marks.

Scale position

The scale can be on the left/top or right/bottom.

Scale visible

The scale can be displayed or hidden.

Show caption

The caption can be displayed or hidden.

Small step

The number or minor tick marks. Smaller numbers produces more tick marks.

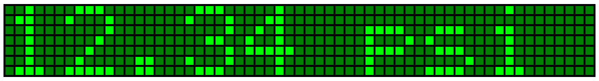
Step

The number of major tick marks. Smaller numbers produces more tick marks.

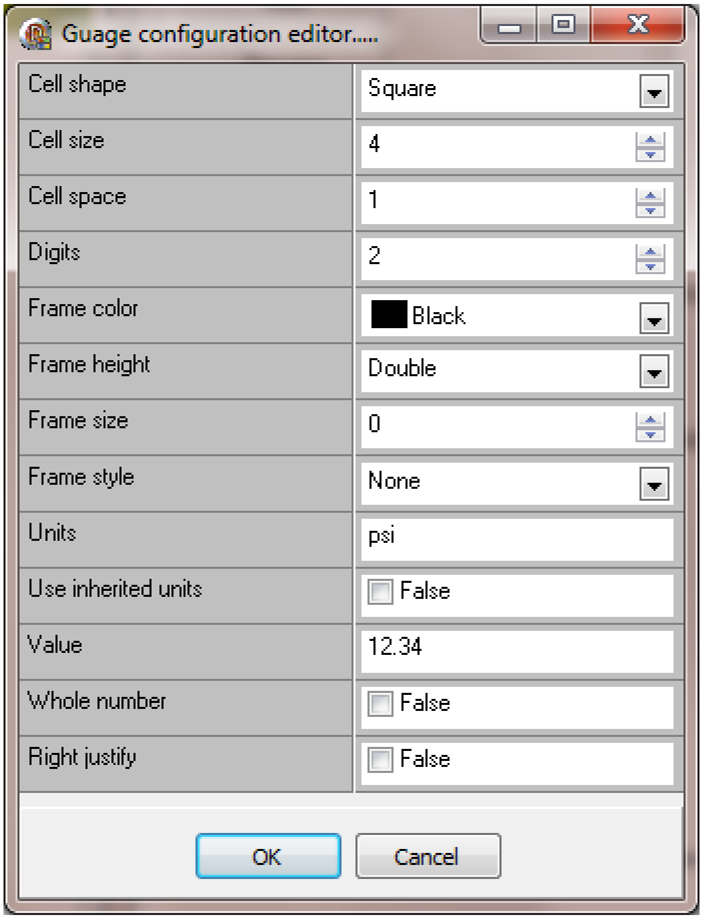
Value

The value displayed at design time.

LCD DISPLAY



The “LCD” display editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Cell shape	Square
Cell size	4
Cell space	1
Digits	2
Frame color	■ Black
Frame height	Double
Frame size	0
Frame style	None
Units	psi
Use inherited units	☐ False
Value	12.34
Whole number	☐ False
Right justify	☐ False

Colors

The cell on color is the pen color.
The cell off color is the foreground color.
The board color is background color.

Cell Shape

The cell can be round or square.

Cell Size

The size of the grid cells.

Cell Space

The size of the space between the cells.

Digits

The number of digits to display after the decimal. If the value is zero the decimal is not shown.

Frame Color

The color of the frame if displayed.

Frame Size

The size of the frame if displayed.

Frame Style

The frame style if displayed.

Units

The units to display. To not display the units blank this field and disable the next attribute.

Use Inherited Units

This overrides the "Units" above and uses the units from the point assigned via animation.

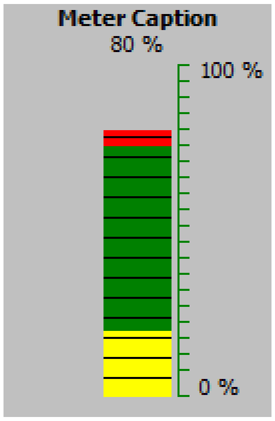
Value

The value of the display. (Provided to show how the control would appear at runtime with a value)

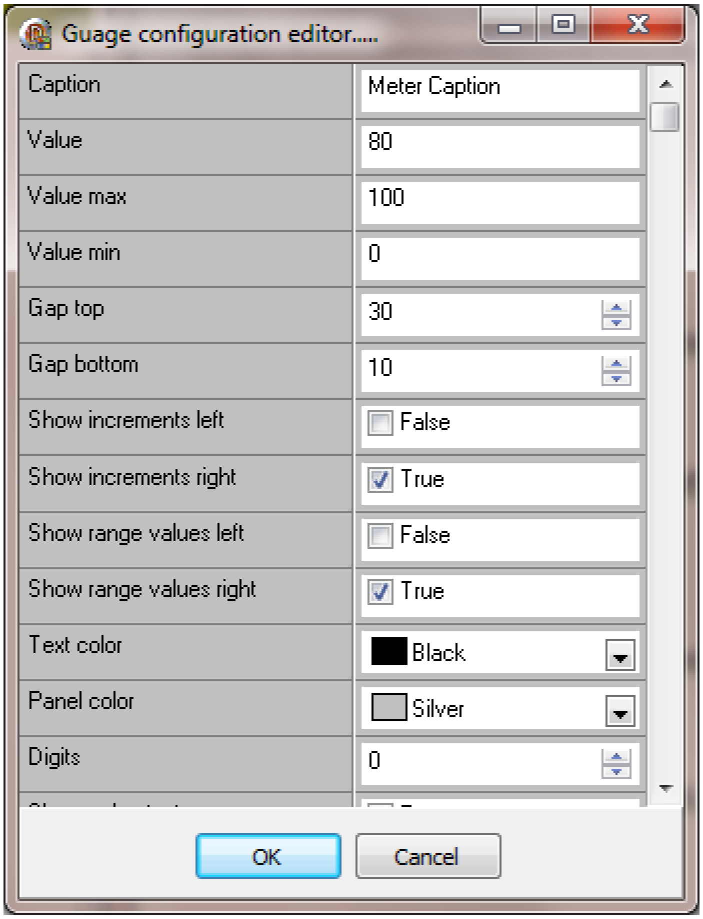
Whole number

If enabled, the floating point number is truncated and displayed.

LED BAR


Meter Caption
80 %
100 %
0 %

The “LED Bar” display editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Guage configuration editor.....

Caption	Meter Caption
Value	80
Value max	100
Value min	0
Gap top	30
Gap bottom	10
Show increments left	☐ False
Show increments right	☑ True
Show range values left	☐ False
Show range values right	☑ True
Text color	■ Black
Panel color	▨ Silver
Digits	0

OK
Cancel

Caption

The text at the top of the element.

Value

The value of the led bar. (Provided to show how the control would appear at runtime with a value.)

Value max

The maximum value of the "value".

Value min

The minimum value of the "value".

Gap Top

This is the gap between the top of the element and the indicator part of the control. The "show value text" and the caption value affect the "top" of the control from the indicator part.

Gap Bottom

This is the gap between the bottom of the element and the indicator part of the control.

Show increments left

Show tick marks on the left side of the filled bar.

Show increments right

Show tick marks on the right side of the filled bar.

Show range values left

Show the maximum and minimum range values on the left side.

Show range values right

Show the maximum and minimum range values on the right side.

Text color

The color of all the text in the element.

Panel color

The background color of the panel. The panel can also be set to transparent via the “Objects” menu.

Digits

The number of digits to display after the decimal. If the value is zero the decimal is not shown.

Show value text

Enable this attribute to display the value at the top of the control below the caption.

Units

The engineering units, if any.

Used inherited units

This overrides the "Units" above and uses the units from the point assigned via animation.

Used inherited ranges

This overrides the "Value Min/Max" above and uses the engineering min/max from the point assigned via animation.

Font Name

The font type for the element

Font Size

The size of the font for the element.

High range text margin

The high range text vertical margin. A positive number positions the text lower, a negative number positions the text higher.

Low range text margin

The low range text vertical margin. A positive number positions the text lower, a negative number positions the text higher.

High value

The value the led color changes from normal to high. This value is PFS - percent of full scale.

High color

The color above the normal color.

Normal color

The color above the low color and below the high color.

Low value

The value the led color changes from normal to low. This value is PFS - percent of full scale.

Low color

The color below the normal color.

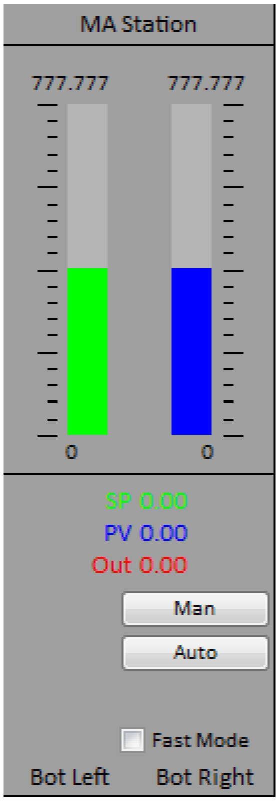
Block height

The height of each LED segment.

Side margin

The number of pixels on each side of the LED bar.

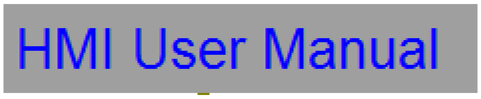
MA STATION (2 BAR)


MA Station
777.777
777.777
0
0
SP 0.00
PV 0.00
Out 0.00
Man
Auto
☐ Fast Mode
Bot Left
Bot Right

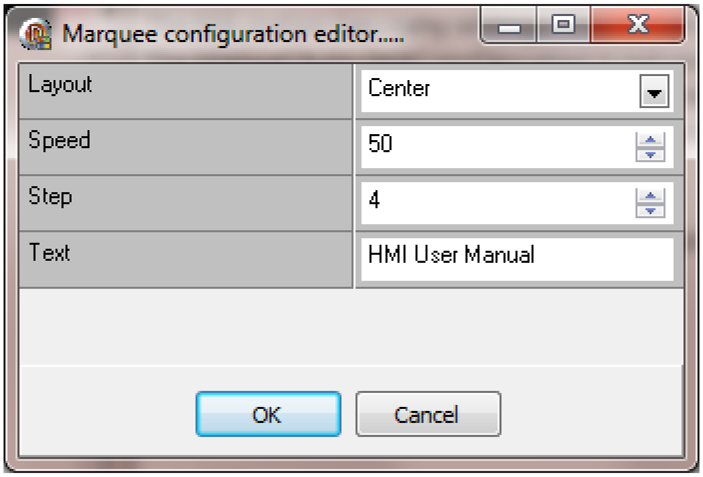
The MA station has many settings. The station is assigned a “configuration” name.
The Manual/Auto (MA) configuration is not contained in the graphic element to allow an MA to be used on a screen and the screen reused. The MA configuration used by an MA element can be set via scripting using the SetMAStationConfiguration command. The graphic element has an initial MA configuration selection.

The MA configuration is covered in the “Graphics Menu” section of this manual.

MARQUEE


HMI User Manual

The “Marquee” display editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Marquee configuration editor.....
OK
Cancel

Layout	Center
Speed	50
Step	4
Text	HMI User Manual

Layout

Determines if the text is aligned with the top, center or bottom.

Speed

The speed at which the text scrolls. Lower numbers are faster. (20 - 50000 milliseconds)

Step

The number of pixels the text moves for each speed pulse

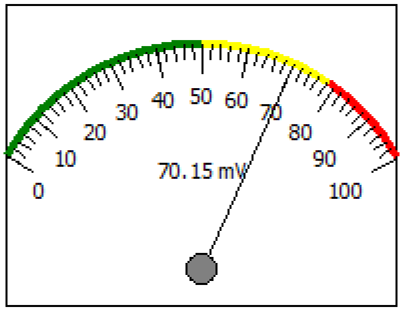
Text

The text to display at runtime. Any of the text animations can be used to change the text.

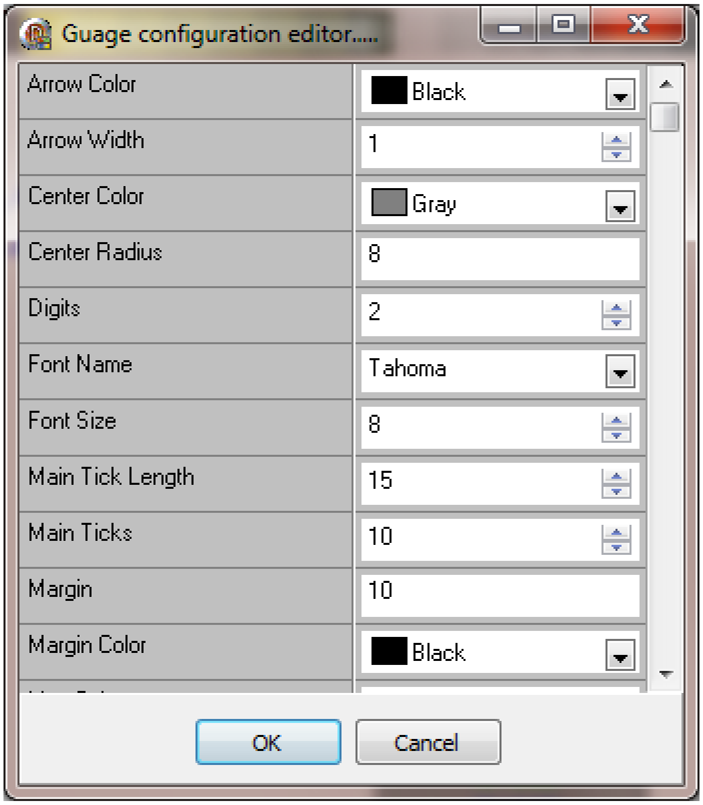
MINI SINGLE PEN TREND

All of the “Mini single pen trend” settings are accessed via the “Animation” dialog. See the “Animation” section of the manual. Under the “Settings/Miscellaneous” the “Mini single pen trend enable” checkbox must be checked for the graphic element to function at runtime.

NEEDLE METER


0
10
20
30
40
50
60
70
80
90
100
70.15 mV

The “Needle Meter” display editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Guage configuration editor.....
OK
Cancel

Arrow Color	■ Black
Arrow Width	1
Center Color	■ Gray
Center Radius	8
Digits	2
Font Name	Tahoma
Font Size	8
Main Tick Length	15
Main Ticks	10
Margin	10
Margin Color	■ Black

Arrow Color

The color of the needle.

Arrow Width

The width of the needled.

Center Color

The color of the circle at the base of the needle.

Center Radius

The radius of the circle at the base of the needle.

Digits

The number of digits to display after the decimal. If the value is zero the decimal is not shown.

Font Name

The font type for the element.

Font Size

The size of the font for the element.

Main Tick Length

The line length for the main tick marks of the scale.

Main Ticks

The number of main tick marks to display.

Margin

The width in pixels around the edge of the meter.

Margin Color

The color of the margin border.

Max Color

The color of the arc on the scale indicating the upper range of the value. A color can be displayed to show to the operator that the value of the monitored variable might be in a certain range. For example, if the scale was 0-100. A good range might be 0-55. This could be indicated using a color setting in "Min Color". A caution range might be 56 to 79 and could be indicated using a color setting in "Mid Color". The trouble range could be > 79 and that could be indicated using this color selection. See maximum indicate value, mid color, min color and minimum indicate value.

Maximum Indicate Value

The lower bounds of the maximum indicate range. (Value is the percent of full scale)

Mid Color

The color of the mid indicate arc on the scale.

Min Color

The color of the minimum indicate arc on the scale

Minimum Indicate Value

The lower bounds of the minimum indicate range. (Value is the percent of full scale)

Scale Angle

The length of the scale.

Show 3D

Draws the outer frame with a 3D appearance.

Show Center

Display the circle at the base of the needle.

Show Frame

Display the meter frame.

Show Margin

Display the margin area.

Show Main Ticks

Display the main tick lines on the scale.

Show Indicator Max

Display the maximum indicator arc. See "Max Color"

Show Indicator Mid

Display the mid indicator arc. See "Max Color"

Show Indicator Min

Display the minimum indicator arc. See "Max Color"

Show Sub Ticks

Display the sub tick lines on the scale.

Show Units

Display the units string.

Show Values

Display the range values at the main tick marks.

Show Value as Text

Display the needle value as text.

Style

The gauge can be displayed with the needle anchor in the bottom left, center or bottom right of a rectangle.

Sub Tick Length

The line length for the sub tick marks of the scale.

Ticks Color

The color of the tick marks.

Units

The engineering units, if any.

Units Color

The color of the units text.

Use Inherited Units

This overrides the "Units" above and uses the units from the point assigned via animation.

Use Inherited Ranges

This overrides the "Value Max" and "Value Min" below and uses the engineering min/max from the point assigned via animation.

Value

The value of the needle. (Provided to show how the control would appear at runtime with a value)

Value Color

The color of scale text.

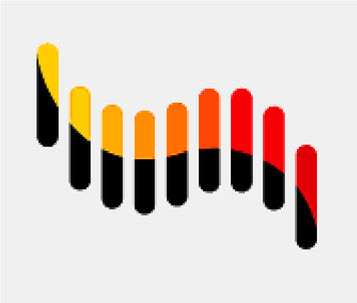
Value Max

The maximum value of the "value".

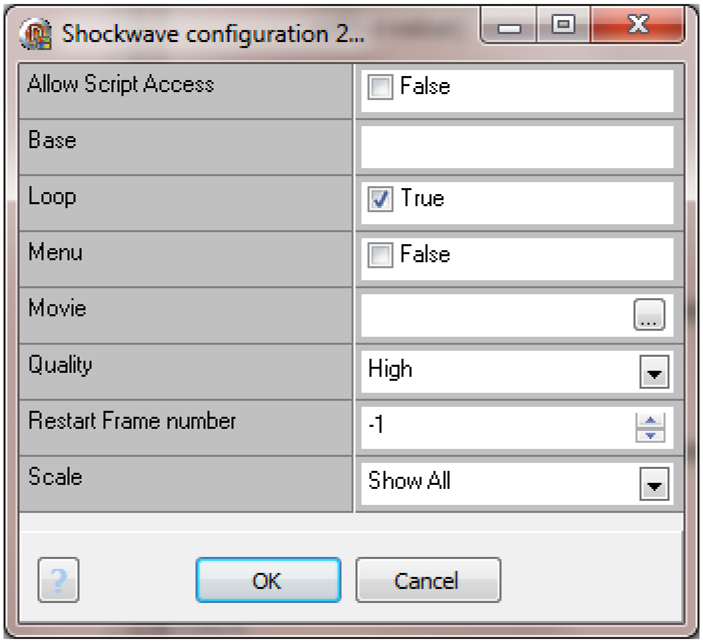
Value Min

The minimum value of the "value".

SHOCKWAVE



The “Shockwave” display editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Allow Script Access	☐ False
Base	
Loop	☑ True
Menu	☐ False
Movie	
Quality	High
Restart Frame number	-1
Scale	Show All

Allow Script Access

Allow outbound scripting from within flash file.

Base

This would be the base directory or URL to resolve relative paths in a flash file.

Loop

If true then animation will repeat, false the animation plays only once.

Menu

If true the menu contains all commands. If false only the 'About' and 'Settings' menus are enabled. Note: This behavior depends on the version of Shockwave Flash OCX.

Movie

The URL or path and file name of the flash file (SWF). This is not affected by the 'base' attribute above.

Quality

The quality of the animation.

Restart Frame Number

If the point.item source evaluates to true the flash file is played. If the value then becomes false the movie is stopped. If the point.item evaluates to true the flash file is resumed. If the value in this attribute is -1 it resumes from the current frame number. Any other number and the flash file resumes from the entered frame number. To restart from the beginning set this value to 0. Note: While the movie is commanded to 'stop' any sounds will continue to play and animations may continue.

Scale

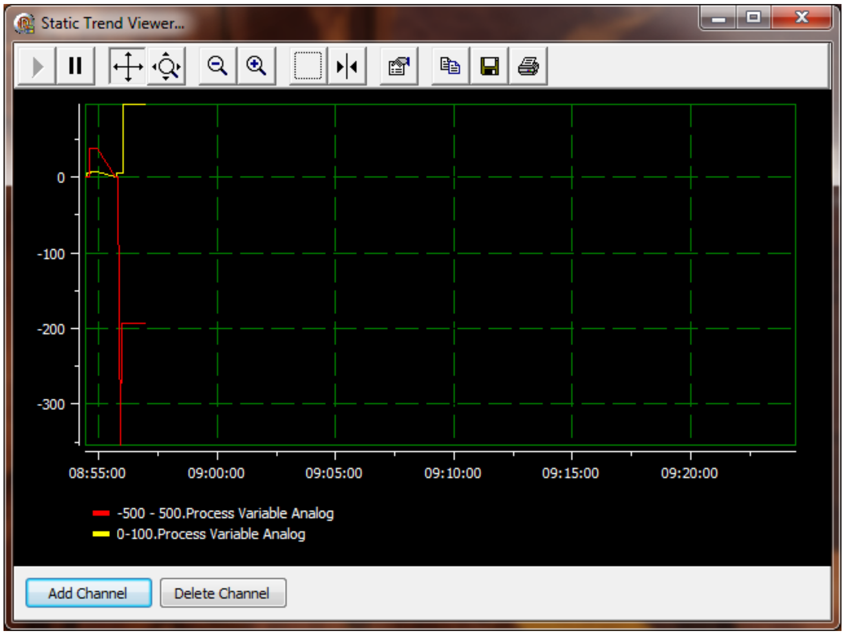
Any scaling of the animation.

TIME/DATE

10/25/2013 10:46:53 AM

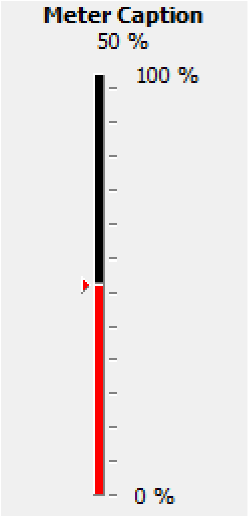
All of the “Mini single pen trend” settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

TREND

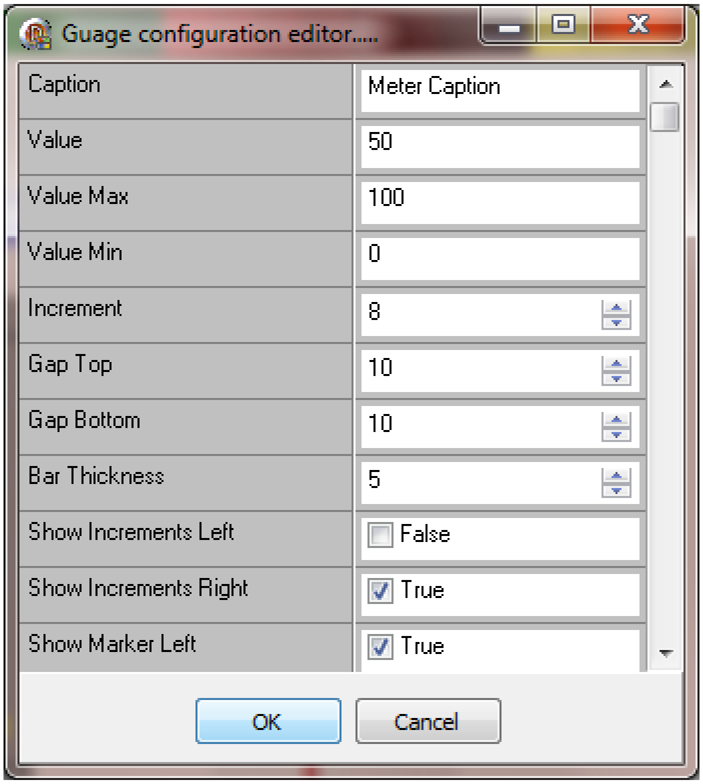

Static Trend Viewer...
0
-100
-200
-300
08:55:00
09:00:00
09:05:00
09:10:00
09:15:00
09:20:00
-500 - 500.Process Variable Analog
0-100.Process Variable Analog
Add Channel
Delete Channel

All of the “Trend” settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

VERTICAL GAUGE


Meter Caption
50 %
100 %
0 %

The “Vertical gauge” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Caption	Meter Caption
Value	50
Value Max	100
Value Min	0
Increment	8
Gap Top	10
Gap Bottom	10
Bar Thickness	5
Show Increments Left	☐ False
Show Increments Right	☑ True
Show Marker Left	☑ True

Caption

The text at the top of the element.

Value

The value of the slider. (Provided to show how the control would appear at runtime with a value)

Value Max

The maximum value of the "value".

Value Min

The minimum value of the "value".

Increment

The frequency of the tick marks, if shown. Lower numbers are more tick marks.

Gap Top

This is the gap between the top of the element and the indicator part of the control. The "show value text" and the caption value affect the "top" of the control from the indicator part.

Gap Bottom

This is the gap between the bottom of the element and the indicator part of the control.

Bar Thickness

The thickness of the filled bar in the middle of the element

Show Increments Left

Show tick marks on the left side of the filled bar.

Show Increments Right

Show tick marks on the right side of the filled bar.

Show Marker Left

Show the triangle position indictor on the left side of the filled bar.

Show Marker Right

Show the triangle position indictor on the right side of the filled bar.

Marker Color

The color of the marker. The color of the filled bar is the brush foreground color and background color. The foreground color is from the bottom to the position of the value. The background is from the value position to the top of the filled bar. The colors can also be changed via animation.

Text Color

The color of all the text in the element.

Panel Color

The background color of the panel. The panel can also be transparent.

Digits

The number of digits to display after the decimal. If the value is zero the decimal is not shown.

Show Value Text

Enable this attribute to display the value at the top of the control below the caption.

Units

The engineering units, if any.

Used Inherited Units

This overrides the "Units" above and uses the units from the point assigned via animation.

Used Inherited Ranges

This overrides the "Value Min/Max" above and uses the engineering min/max from the point assigned via animation.

Font Name

The font type for the element

Font Size

The size of the font for the element.

High Range Text Margin

The high range text vertical margin. A positive number positions the text lower, a negative number positions the text higher.

Low Range Text Margin

The low range text vertical margin. A positive number positions the text lower, a negative number positions the text higher.

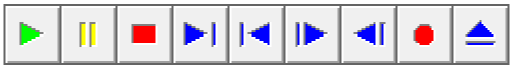
Hide Range Text

If enabled the range text will not be displayed in the gauge.

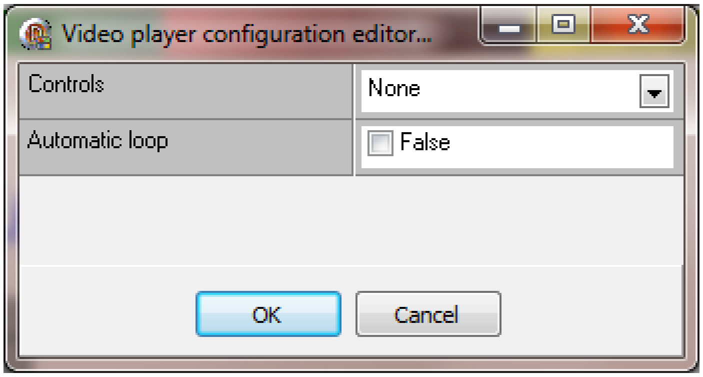
VIDEO

All of the “Video” settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

VIDEO PLAYER



The “Video player” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Controls: None

Automatic loop: ☐ False

Controls

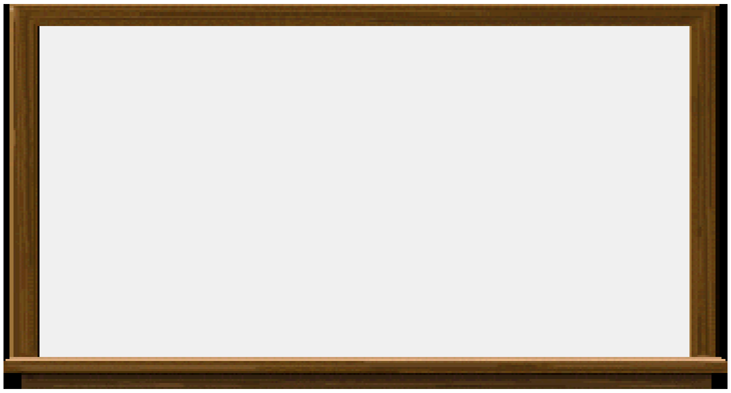
The control bar contains buttons to start, pause, rewind, etc. the playback.

None	The control bar is not visible. The file will be played when the window is opened.
Mini	The 'mini' control bar is displayed at the bottom of the graphic element.
Full	The 'full' control bar is displayed at the bottom of the graphic element.

Automatic loop

When the playback reaches the end, the playback will start again from the beginning.
If enabled, the playback will start when the window is opened.

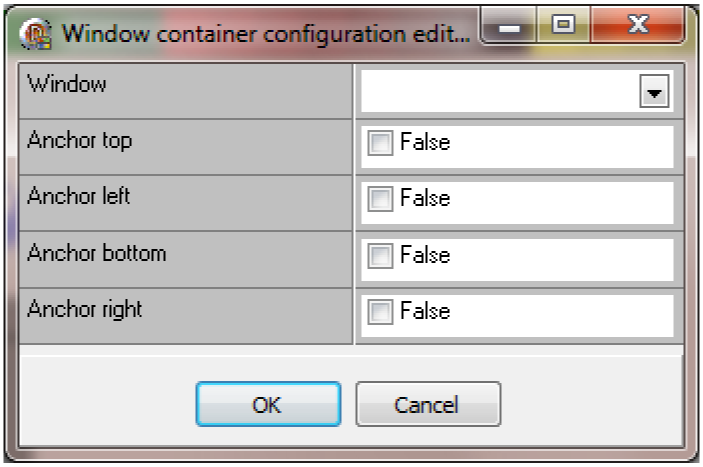
WINDOW CONTAINER



This element is used to display a window inside of another window.

For example, the project requires a collection of 16 LED indicators to be at the top of all windows and to display the same information. Placing all the LEDs in one window, setting the animations and then referring to the window in all other windows would be a better solution than re-creating the LED 'panel' in each window.

The “Window container” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Window container configuration edit...

Window	
Anchor top	☐ False
Anchor left	☐ False
Anchor bottom	☐ False
Anchor right	☐ False

Window

The name of the source window to display in the destination window.

Anchor top, left, bottom, right

If enabled the corner of the source window will be anchored to the corner of the destination window.

For example:
To anchor across the complete top of the destination window, enable the top, right and left.

To anchor across the complete left side of the destination window, enable the top, bottom and left.

To anchor across the complete bottom of the destination window, enable the left, bottom and right.

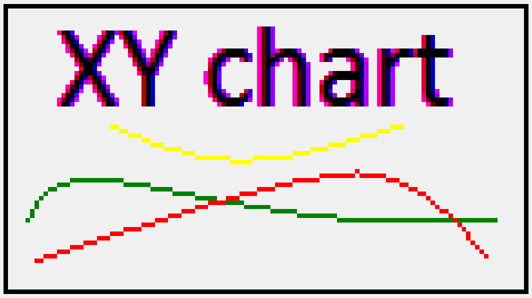
Design time

Notes :
The source window image is loaded from disk when:
1) The window is open.
2) The size of the element is modified.
3) When the element is edited via the configuration window.

Runtime

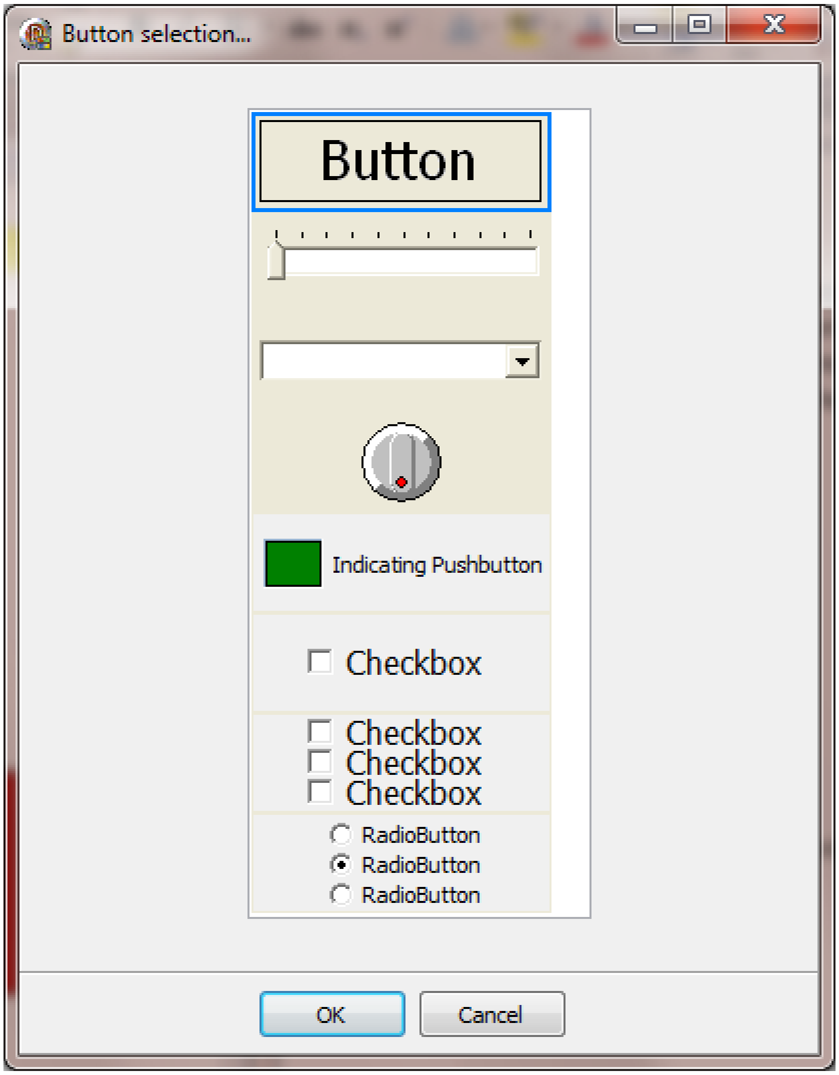
Notes:
1) The source window script settings do not apply.
2) If the hide/show animation is configured for the window container, all the objects of the source window will use the same hide/show configuration as the window container when the window is displayed in the window container.

XY CHART



All of the “XY chart” settings are accessed via the “Animation” dialog. See the “Animation” section of the manual.

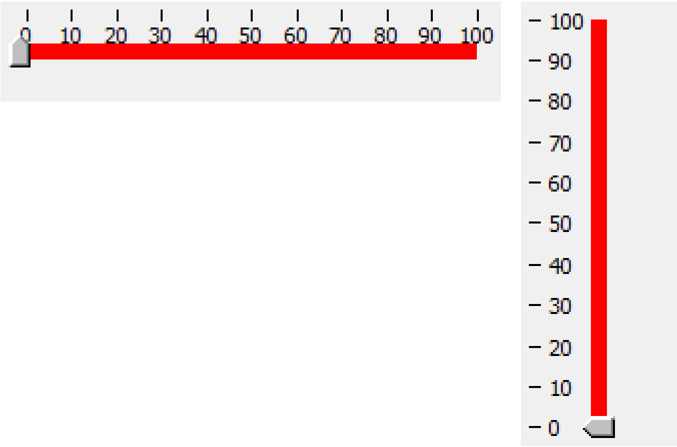
BUTTON OBJECTS BTN


Button selection...
Button
Indicating Pushbutton
☐ Checkbox
☐ Checkbox
☐ Checkbox
☐ Checkbox
○ RadioButton
● RadioButton
○ RadioButton
OK
Cancel

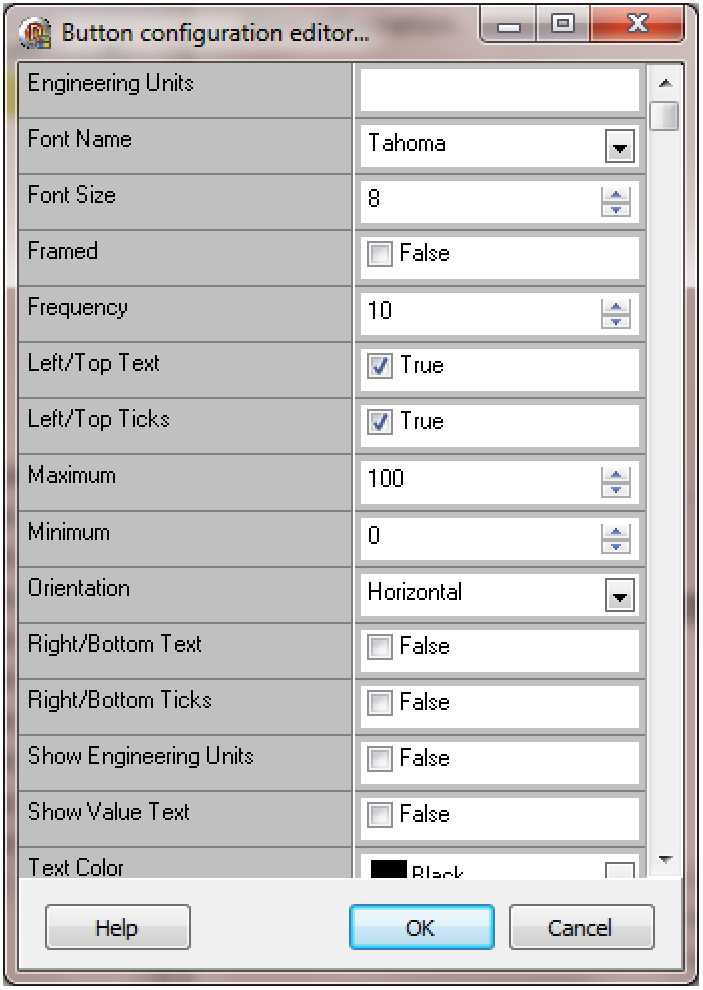
The button objects are listed below in alphabetical order.

Almost any graphic element can respond to mouse clicks. Refer to the “Animation” section for more information.

ANALOG SLIDER


0
10
20
30
40
50
60
70
80
90
100

The “Analog slider” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Button configuration editor...
Help
OK
Cancel

Engineering Units	
Font Name	Tahoma
Font Size	8
Framed	☐ False
Frequency	10
Left/Top Text	☑ True
Left/Top Ticks	☑ True
Maximum	100
Minimum	0
Orientation	Horizontal
Right/Bottom Text	☐ False
Right/Bottom Ticks	☐ False
Show Engineering Units	☐ False
Show Value Text	☐ False
Text Color	Black

Engineering Units

Text to display near the thumb if enabled.

Font name and size

Text font type and size for numeric scale and value text, if enabled.

Framed

Draw a frame around the control.

Frequency

The number of division for the ticks and scale text.

Left/Top Text

If the control is vertical show text scale values on the left side. If the control is horizontal show text scale values on the top of the control.

Left/Top Ticks

If the control is vertical show tick marks on the left side. If the control is horizontal show ticks on the top of the control.

Maximum

The maximum value of the control.

Minimum

The minimum value of the control.

Orientation

The control can be vertical or horizontal.

Right/Bottom Text

If the control is vertical show text scale values on the right side. If the control is horizontal show text scale values on the bottom of the control.

Right/Bottom Ticks

If the control is vertical show tick marks on the right side. If the control is horizontal show ticks on the bottom of the control.

Show Engineering Units

The engineering units will be displayed near the thumb.

Show Value Text

The current value will be displayed near the thumb.

Thumb Size

The size of the thumb in the control.

Text Color

The color of the text on the control.

Thumb Type

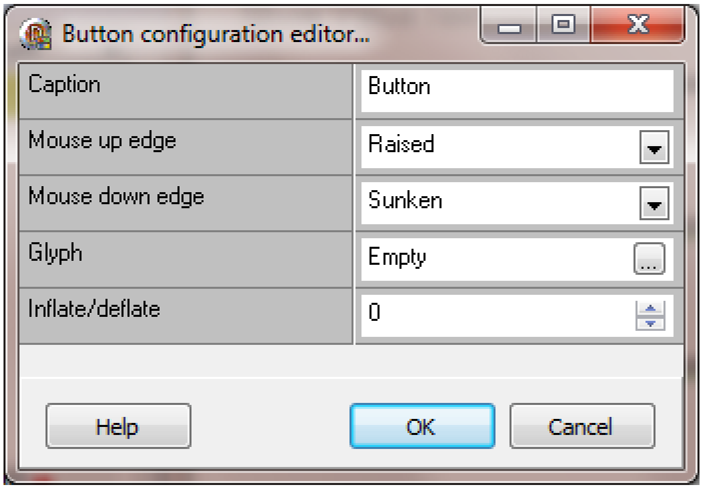
The thumb style can be Box, Circle, Diamond, Pointer or Square.

Track Width

The width of the bar the thumb slides over.

BUTTON

The “Button” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Button configuration editor...

Caption	Button
Mouse up edge	Raised
Mouse down edge	Sunken
Glyph	Empty
Inflate/deflate	0

Colors

Foreground color = caption (text) color
Background color = inside area of the button

To only change the color of the buttons background at runtime, set the text color at design time (foreground color) and set the button background color at design time. In the animation configuration dialog, select the brush and set the foreground color to the same color as selected at design time and set the background color to the desired color.

Caption

The text displayed in the button

Mouse up/down edge

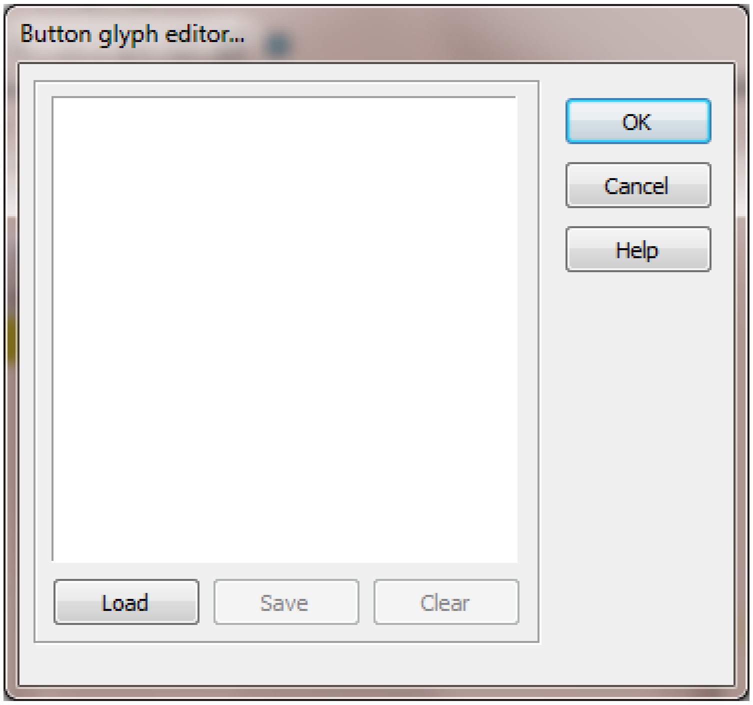
The border style of the button when the left mouse button is up or down in the button.

Glyph

The button can display a picture. If the text is "Empty" the button will not display a picture. If the text is "Loaded" a picture has been loaded for viewing. Select the button in the field to load the editor.

The text in the button is always aligned vertical and horizontal center.

Button glyph editor



Load

Select the load button to import a graphic file.

Save

Select the save button to export the picture to a bitmap.

Clear

Select the clear button to erase the image.

OK

Select the OK button to accept the settings. When the OK button is selected the button will be sized to the dimensions of the bitmap. The button can then be sized as needed.

Cancel

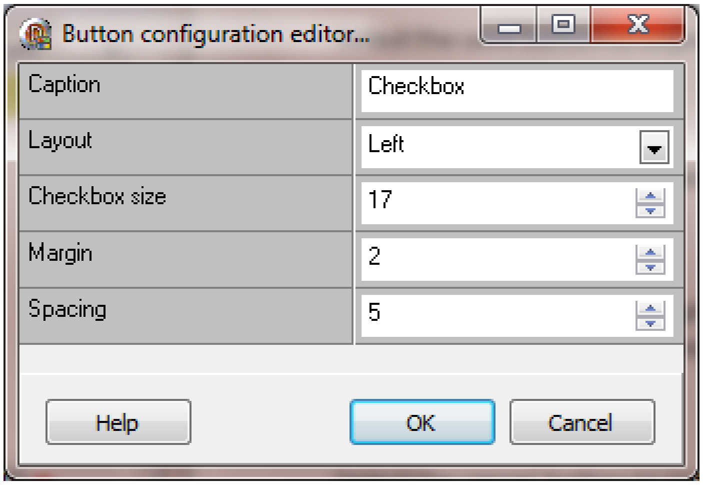
Select the cancel button to not make any changes to the picture.

Inflate/deflate

The value can be 0 - 10. If the value is greater than 0 and the left mouse button is pressed inside the button, the button will be drawn with the size (in pixels) increased, all sides, the amount of the inflate value until the left mouse button is released.

CHECKBOX

The “Checkbox” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Caption	Checkbox
Layout	Left
Checkbox size	17
Margin	2
Spacing	5

When the left mouse button is pressed and released in the element the value of the source point is negated. If this is a PLC point a write command is issued.

Colors

Foreground color = caption (text) color

Caption

The text displayed in the button.

Layout

The location of the checkbox in the button.

Checkbox size

The size of the checkbox.

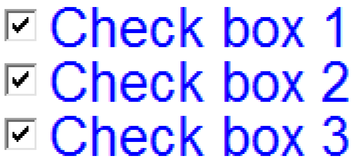
Margin

The distance from the checkbox to the border of the button based on the layout. If the value is -1 the checkbox/caption is centered. Negative numbers move the checkbox up/left, positive numbers move the checkbox down/right.

Spacing

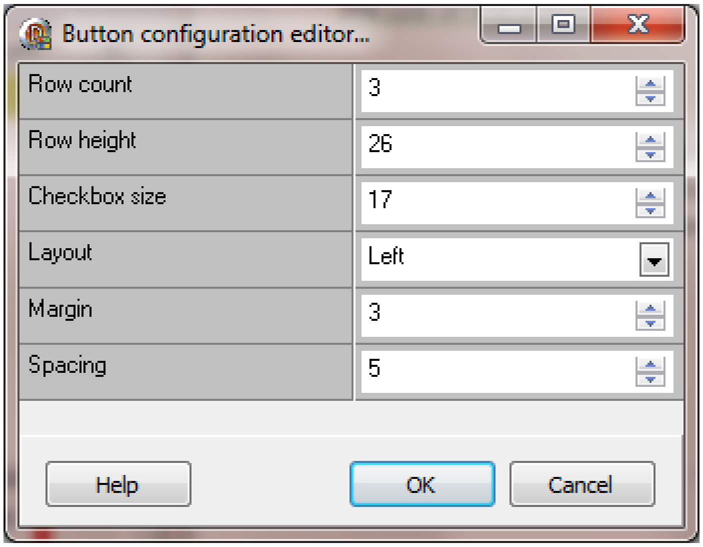
This is the space between the checkbox and the text.

CHECKLIST



☑ Check box 1
☑ Check box 2
☑ Check box 3

The “Checklist” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Button configuration editor...

Row count	3
Row height	26
Checkbox size	17
Layout	Left
Margin	3
Spacing	5

When the left mouse button is pressed and released in a checkbox, the values of the checkboxes are examined and the 16 bit value is written to the point.
The current internal value is used. If the checkbox count is less than 16, the unused bits are not changed. If this is a PLC point a write command is issued.

Colors

Foreground color = caption (text) color

Row count

The number of checkboxes in the list. (2-16).

Row height

Each checkbox is one row in a column. This is the height of each checkbox row.

Checkbox size

The size of the checkbox.

Layout

The location of the checkbox in the row.

Margin

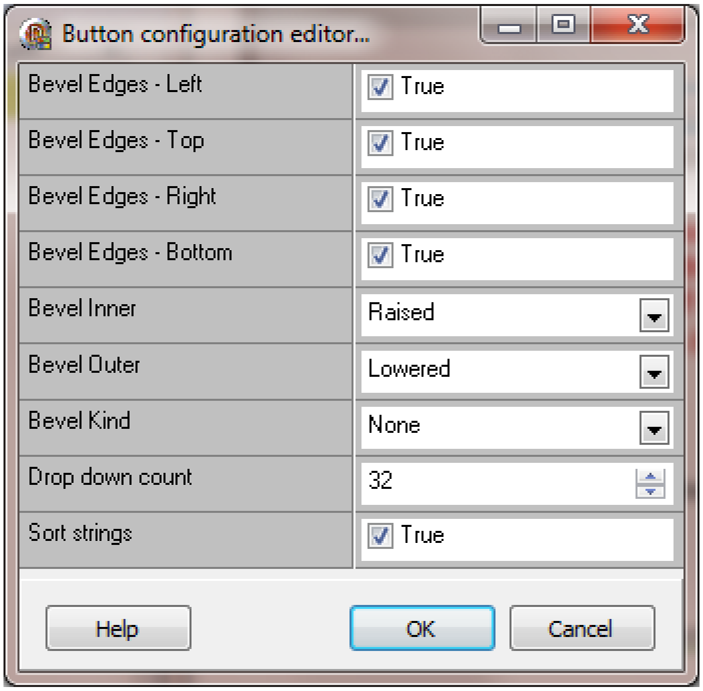
The distance from the checkbox to the border of the list based on the layout. If the value is -1 the checkbox/caption is centered. Negative numbers move the checkbox up/left, positive numbers move the checkbox down/right.

Spacing

This is the space between the checkbox and the text.

DROP LIST

The “Checklist” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Bevel Edges - Left	☑ True
Bevel Edges - Top	☑ True
Bevel Edges - Right	☑ True
Bevel Edges - Bottom	☑ True
Bevel Inner	Raised
Bevel Outer	Lowered
Bevel Kind	None
Drop down count	32
Sort strings	☑ True

Background Color

This is the color of the fill.

Pen Color

The color of the text.

Bevel Edges (Left, Top, Right, Bottom)

Depending on the other selections true shows the edge.

Bevel Inner, Outer

The drop down list will show the inner or outer edge.

Bevel Kind

Select the bevel style.

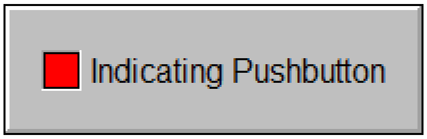
Drop down count

Determines the number if strings that are displayed when the drop down list appears.

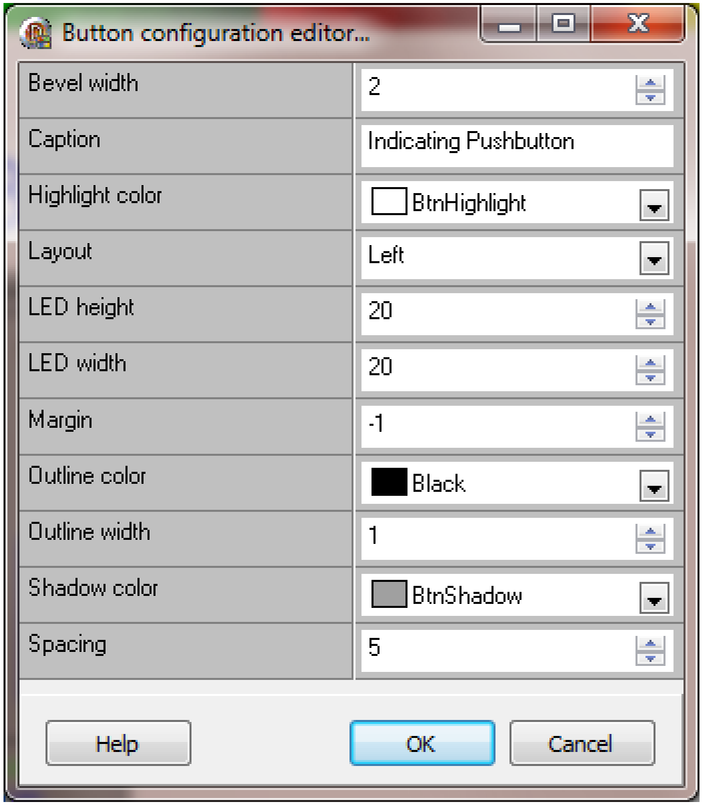
Sort strings

Alphabetically sort the strings for display. Otherwise they are shown as entered in the list. Blank strings are not displayed.

INDICATING PUSHBUTTON



The “Indicating Pushbutton” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Bevel width	2
Caption	Indicating Pushbutton
Highlight color	☐ BtnHighlight
Layout	Left
LED height	20
LED width	20
Margin	-1
Outline color	■ Black
Outline width	1
Shadow color	▨ BtnShadow
Spacing	5

This graphic element is a hybrid. The indicator part is controlled via the pen, brush, hide/show, etc. animations. The “disable” is to disable mouse commands. If the “Indicating pushbutton” animation is not enabled the mouse commands and flash (if enabled) will not function.

Colors

Pen color	LED color
Foreground color	caption (text) color
Background color	inside area of the button

Bevel width

The width of the bevel around the edge of the button.

Caption

The text displayed in the button.

Highlight color

The color of the top left portion of the bevel.

Layout

The location of the LED in the button.

LED height/width

The height and width of the LED.

Margin

The distance from the LED to the border of the button based on the layout. If the value is -1 the LED/caption is centered. Negative numbers move the LED up/left, positive numbers move the LED down/right.

Outline color

The color of the border around the button.

Outline width

This creates a border around the button.

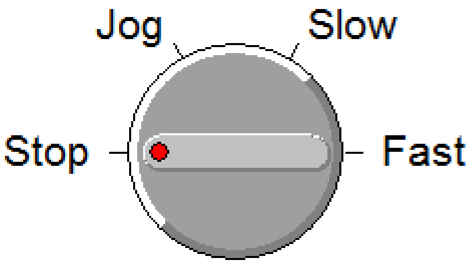
Shadow color

The of the bottom right portion of the bevel.

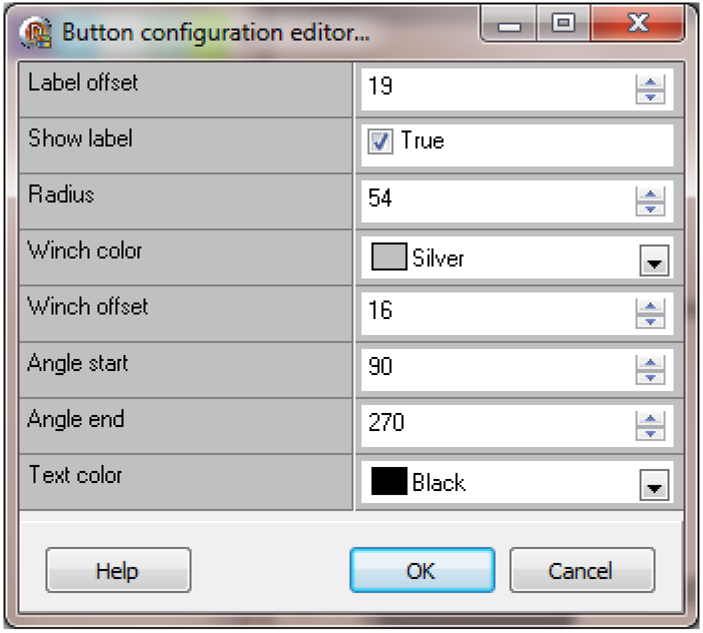
Spacing

This is the space between the LED and the text.

KNOB SWITCH


Jog
Slow
Stop
Fast

The “Knob Switch” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.


Button configuration editor...

Label offset	19
Show label	☑ True
Radius	54
Winch color	Silver
Winch offset	16
Angle start	90
Angle end	270
Text color	Black

Help
OK
Cancel

Colors

Pen color	button color (circle in the winch)
Foreground color	inside area of the switch
Background color	rectangle around the switch

Label offset

The distance of the label from the switch.

Show label

If true the labels are displayed.

Radius

The size of the switch.

Winch color (bar in the middle of the switch)

The color of the winch.

Winch offset

The size of the winch.

Angle start

This is the start of the switch positions. 0 is 6 o'clock, 90 is 9 o'clock, 180 is 12 o'clock, etc.

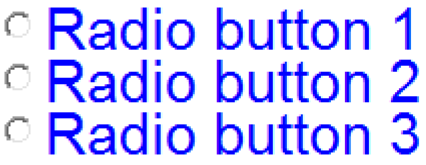
Angle end

This is the end of the switch positions. 0 is 6 o'clock, 90 is 9 o'clock, 180 is 12 o'clock, etc.

Text Color

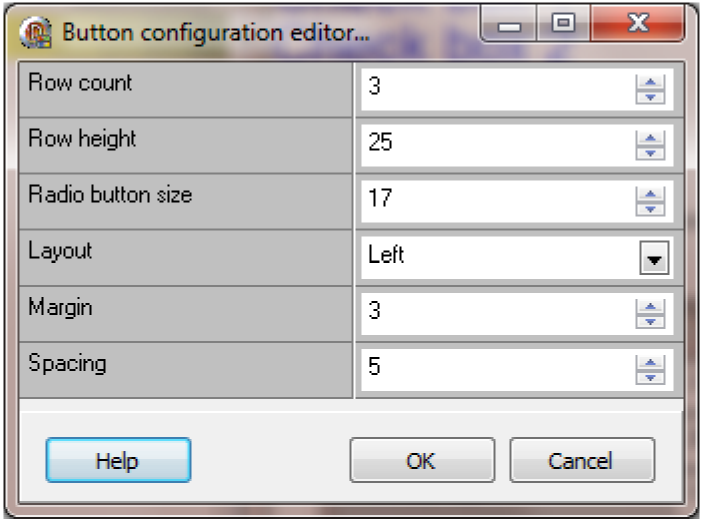
The color of the text labels.

RADIO BUTTON LIST



○ Radio button 1
○ Radio button 2
○ Radio button 3

The “Radio button list” editor is accessed via the main menu “Objects/Edit” or via the right click popup menu “Edit”.



Button configuration editor...

Row count	3
Row height	25
Radio button size	17
Layout	Left
Margin	3
Spacing	5

When the left mouse button is pressed and released in a radio button, the values of the radio buttons are examined and the 16 bit value is written to the point.
The current internal value is used. If the radio button count is less than 16, the unused bits are not changed. If this is a PLC point a write command is issued.

Colors

Foreground color = caption (text) color

Row count

The number of radio buttons in the list. (2-16).

Row height

Each radio button is one row in a column. This is the height of each radio button row.

Radio button size

The size of the radio button.

Layout

The location of the radio button in the row.

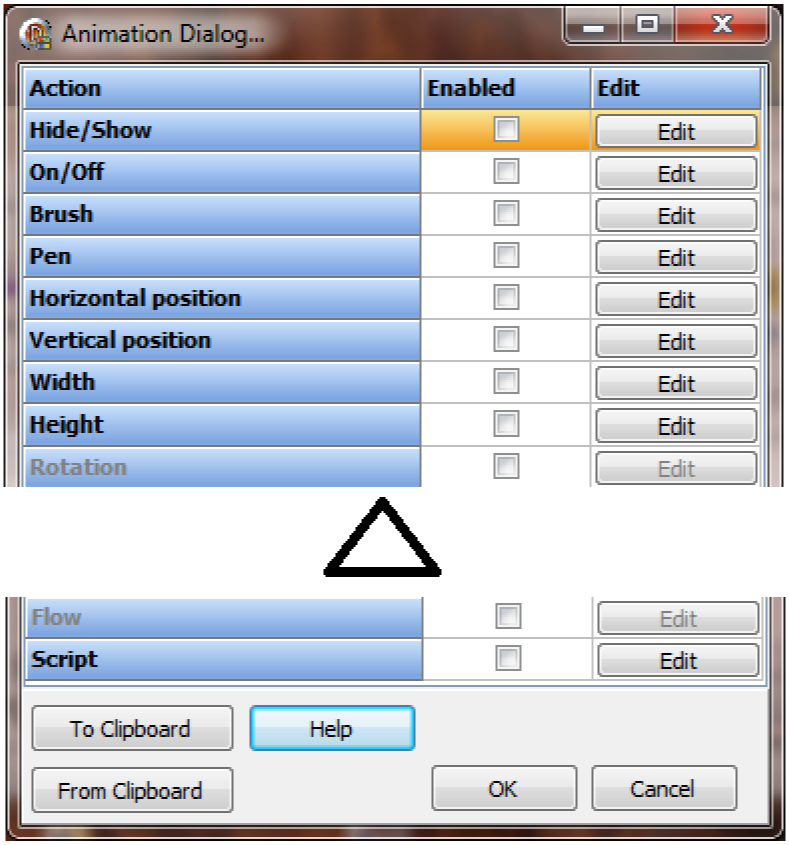
Margin

The distance from the radio button to the border of the list based on the layout. If the value is -1 the radio button/caption is centered. Negative numbers move the radio button up/left, positive numbers move the radio button down/right.

Spacing

This is the space between the radio button and the text.

ANIMATIONS


Animation Dialog...

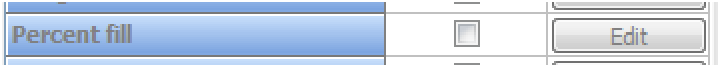
Action	Enabled	Edit
Hide/Show	☐	Edit
On/Off	☐	Edit
Brush	☐	Edit
Pen	☐	Edit
Horizontal position	☐	Edit
Vertical position	☐	Edit
Width	☐	Edit
Height	☐	Edit
Rotation	☐	Edit
Flow	☐	Edit
Script	☐	Edit

To Clipboard
Help
From Clipboard
OK
Cancel

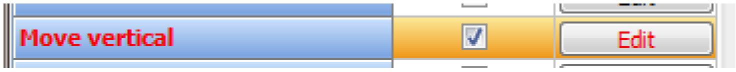
There are many types of animations. Many objects have several animations. Some objects only have a few. Most support Hide/show and then one or two more.

Not all animations types apply to all element types. For example, the "Time/Date" cannot be applied to a circle.

If the animation name is greyed, the animation for that object is selected.


Percent fill
☐
Edit

If the animation is red, the animation has a source address.


Move vertical
☑
Edit

If the “Enabled” checkbox is not checked, the animation will not be active at runtime.

Most animation windows will have a source button. Use this to select the tagname.item number monitored for the animation. When configuring the mouse actions, the mouse commands window is displayed.

To/From Clipboard buttons

If selected the elements animation configuration will be copied to the clipboard. This allows the duplication of the animation configuration from one type of element to another.

For example, a circle has a hide/show animation. A rectangle needs the same animation. Double click on the circle, set the animation if needed, and select the "To Clipboard" button. Select the OK or cancel as is appropriate. Double click the rectangle element. When the animation window appears select the "From Clipboard" button. The animation configuration from the clipboard will be pasted into the rectangle element.

Items B0 - B15 are not applicable to all point types. Based on the device communication protocol some or all of the items might be defined. Please refer to the 'port' settings for the port used in the source address of the point.

Digital Panel

When the item type is digital and the value is false, the object is rendered at runtime as it was designed at design time. If the value is true the settings in the animation dialog are used to render the object.

Analog Panel

When the item type is analog and the runtime value of the tagname.item monitored is less than the bottom value (last row) the design time configuration of the object is displayed. At runtime the animation engine starts at the first row, the top row and checks the comparisons against the item value and if the condition is true the settings are applied and subsequent rows are not processed.

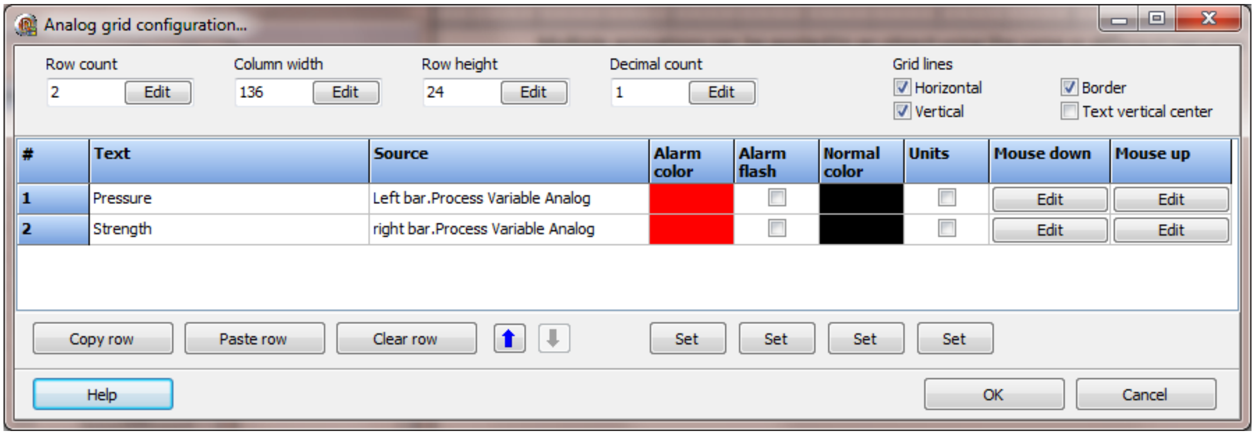
To place a bitmap on the window, if it is on the clipboard, select paste and the object will be created on the window or drag and drop a file.

Multiple animations can be applied to an object using the same or different tagname item pairs.

The items most used would be:

5000	Process Variable Analog
5007	Process Variable Digital
5008	Percent of Full Scale

ANALOG GRID


Analog grid configuration...

Row count: 2
Column width: 136
Row height: 24
Decimal count: 1

Grid lines
☑ Horizontal
☑ Vertical
☑ Border
☐ Text vertical center

#	Text	Source	Alarm color	Alarm flash	Normal color	Units	Mouse down	Mouse up
1	Pressure	Left bar.Process Variable Analog	🟥	☐	⬛	☐	Edit	Edit
2	Strength	right bar.Process Variable Analog	🟥	☐	⬛	☐	Edit	Edit

The grid contains rows of text and an indicator rectangle. The "Set" button below the On and Off Color columns will display a color selection dialog. If "OK" is selected the color will be set for all the rows. The "Set" button below the Flash On and Off column will set all the checkboxes in the column to the state of the check box in the first row.

Notes:
1. The foreground color is the text color.
2. Transparent is not applicable to this object.
3. When setting the user level for mouse actions the level selected applies to all rows.

Row count

The number of rows in the grid. (1 - 128)

Column width

The width of the indicator column. (4 - 512) The text column is the remainder of the width of the gird.

Row height

The height of each row. (4 - 512)

Decimal count

To display large numbers, as whole numbers, set the decimal point count to -1. The floating point value will be trunc'd and displayed.

Grid lines

Horizontal, Vertical, Border. If enabled the grid/border lines will be displayed.

Text vertical center

The text will be centered in the cell. Otherwise, the text will be aligned at the top of the cell.

For each row

Text

The text to display in the first column

Source

The source point must be a host digital or host digital pointer.

Alarm color

The color of the indicator column when the source is in alarm. (Points must have alarms configured)

Alarm flash

If the source is in alarm and this is enabled the value will flash between the alarm color and normal color.

Normal color

The color of the indicator column when the source is not in alarm.

Engineering units

If the enabled points engineering units will be appended to the value. (<value> space <engineering units>)

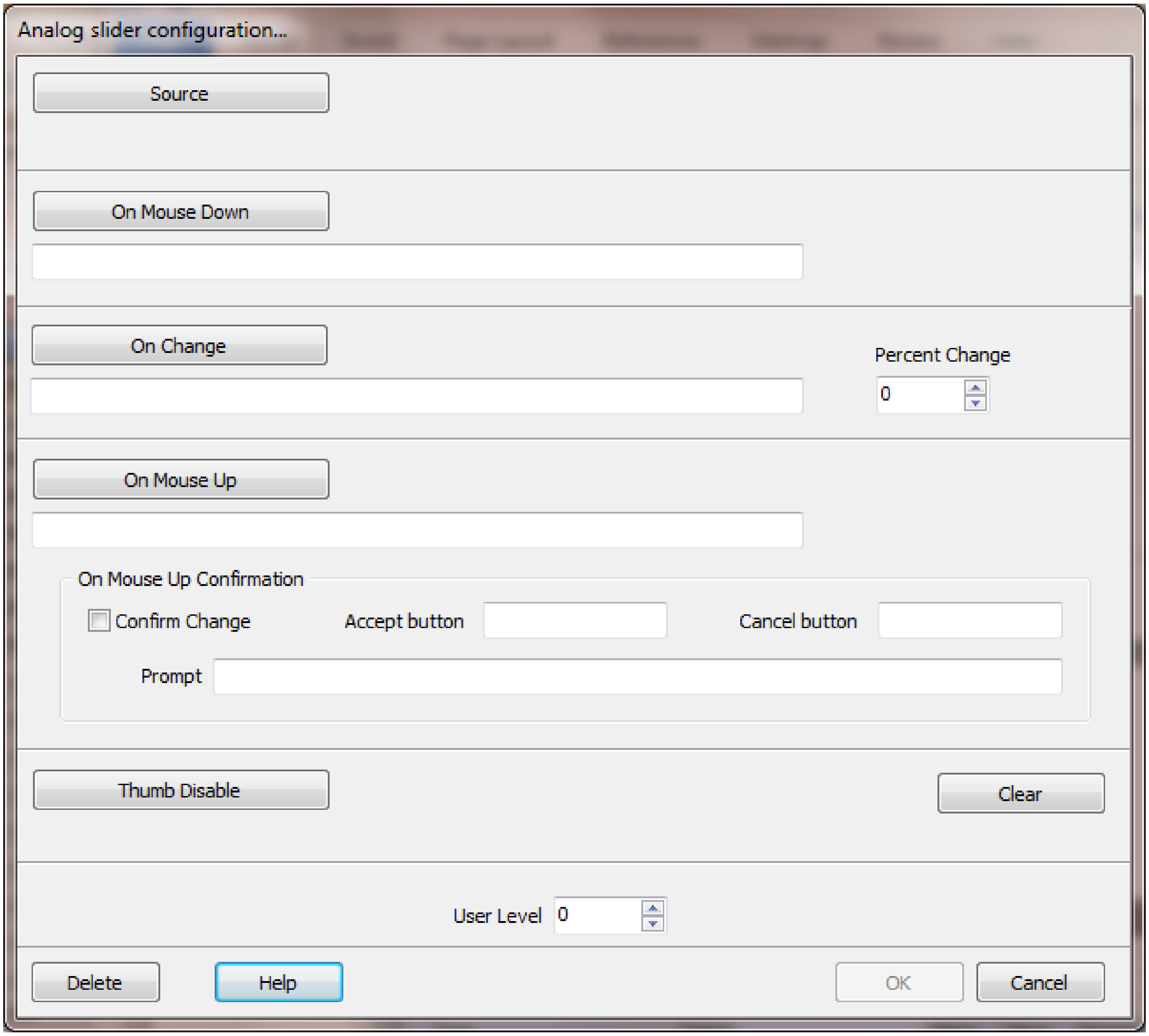
Mouse down

This provides for mouse commands when the mouse is pressed in the indicator for the row.

Mouse up

This provides for mouse commands when the mouse is pressed and released in the indicator for the row.

ANALOG SLIDER


Analog slider configuration...
Source
On Mouse Down
On Change
Percent Change
0
On Mouse Up
On Mouse Up Confirmation
☐ Confirm Change
Accept button
Cancel button
Prompt
Thumb Disable
Clear
User Level
0
Delete
Help
OK
Cancel

Source

The source point must be an analog or host analog pointer. The value of the slider position is stored in the source.

All the mouse and change actions below apply the "User Level" property. The logged on user must have an access level at least as high as the value in the field.

On Mouse Down

If configured this script is called anytime the left mouse button is pressed in the control.

On Change

If configured this script is called anytime the position of the control changes. If the "Percent Change" field is not zero (0) then the script is only called once the amount of change is greater than X percent of full range.

On Mouse Up

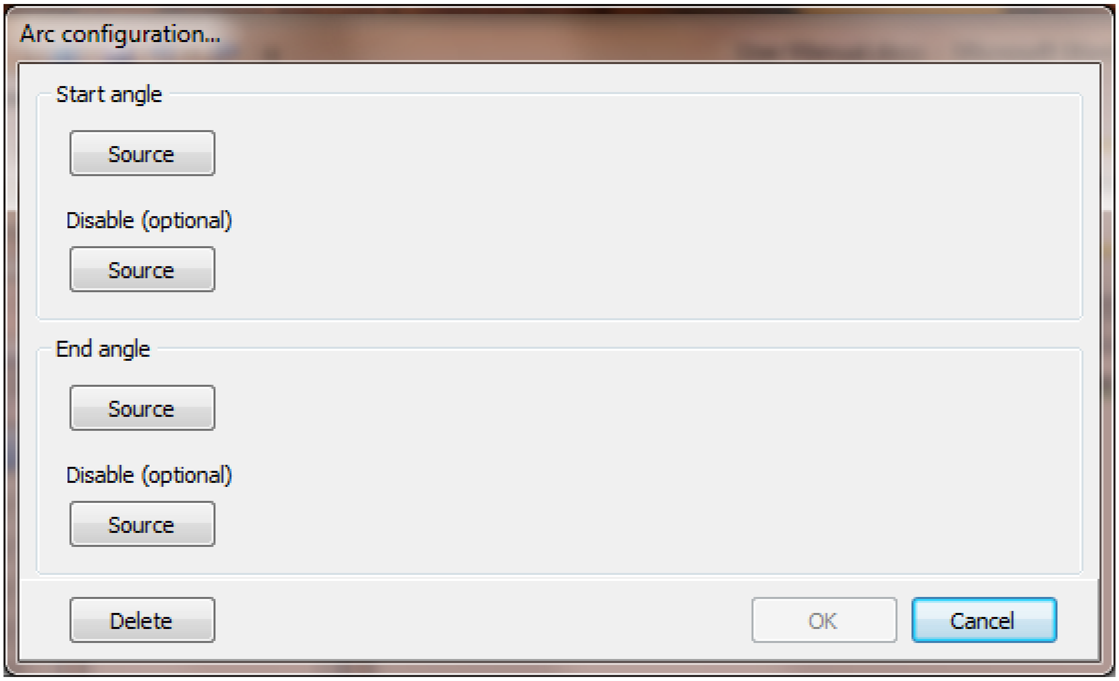
If configured this script is called anytime the left mouse button is released after having been pressed in the control. If the mouse pointer is outside the control rectangle the slider position is restored to the value when the mouse button was pressed. If the "Confirm Change" checkbox is checked a confirmation window will appear. If the user selects the "accept" button the script is called. If the user selects the "cancel" button the script is not called and the slider position is restored to the value when the mouse button was pressed.

Note: The automatic write to the source tag is disabled when an On Mouse Up script is selected. If you need help with this feature, contact support.

Thumb Disable

A digital point to enable/disable the thumb of the slider. The clear button removes the source.

ANIMATED ARC


Arc configuration...
Start angle
Source
Disable (optional)
Source
End angle
Source
Disable (optional)
Source
Delete
OK
Cancel

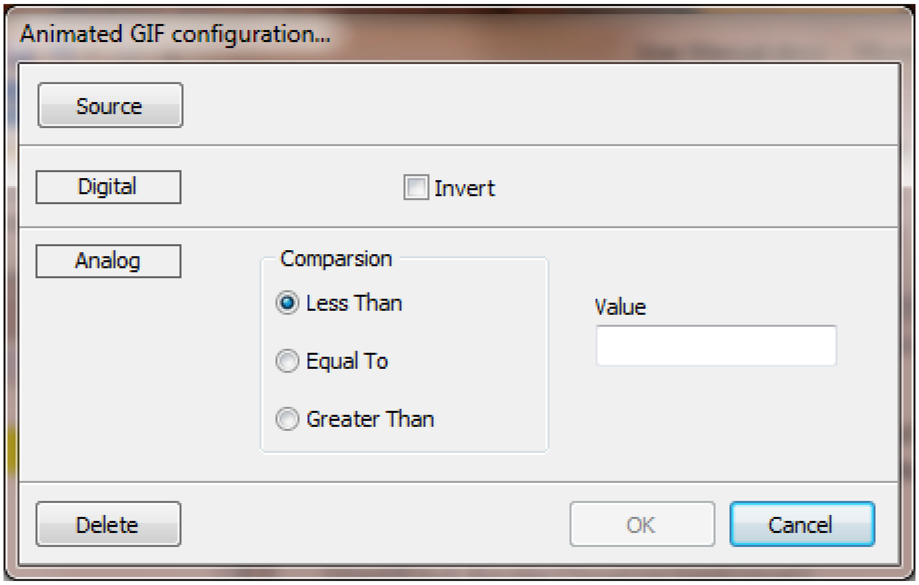
Start/End Angle Source

The analog tagname.item used to control the arc starting or ending angle. The value must be 0-359. Use the point scaling feature if needed. The value used for the start/end point is <input value modulus 360>.

Start/End Angle Disable (optional)

The digital tagname.item used to disable the changing of the start/end angle. If the input is true the angle is not changed.

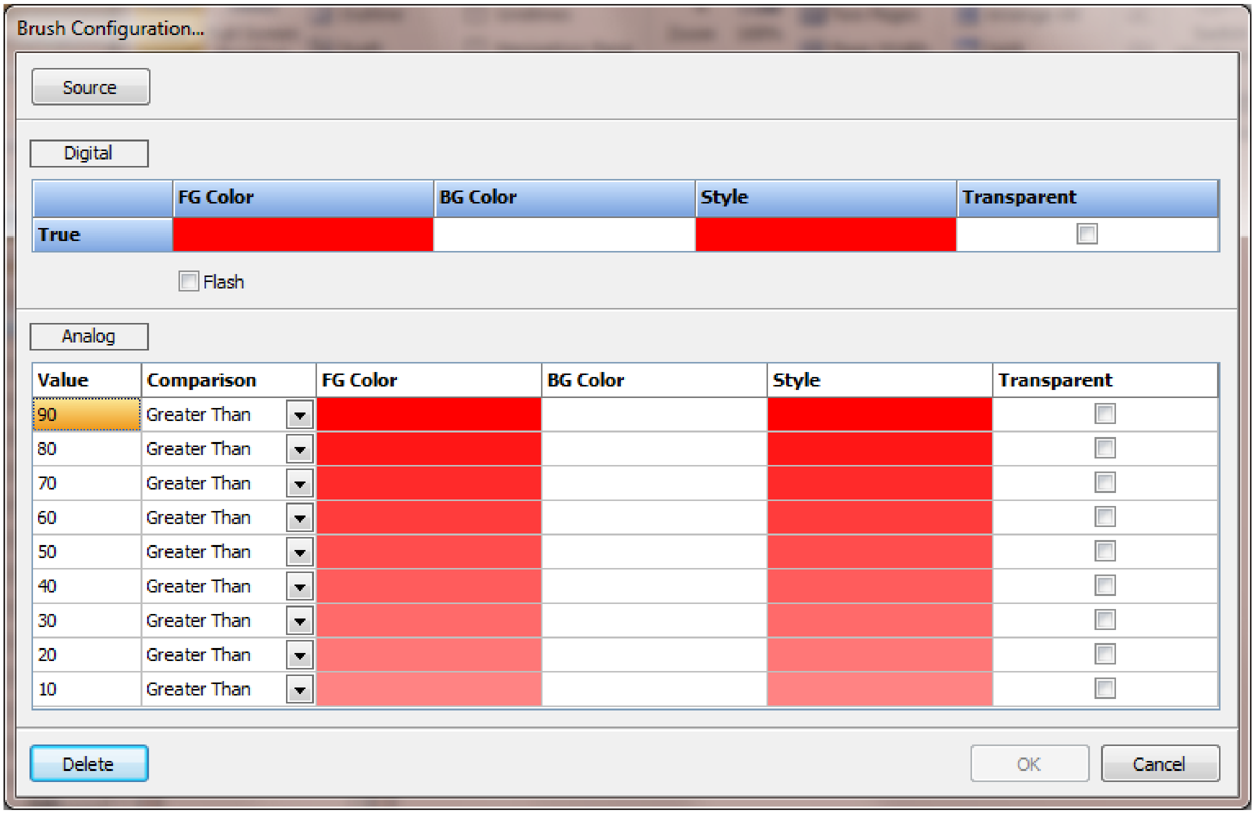
ANIMATED GIF


Animated GIF configuration...
Source
Digital
☐ Invert
Analog
Comparsion
● Less Than
○ Equal To
○ Greater Than
Value
Delete
OK
Cancel

Source

The source point used to "run" the animation.

BRUSH



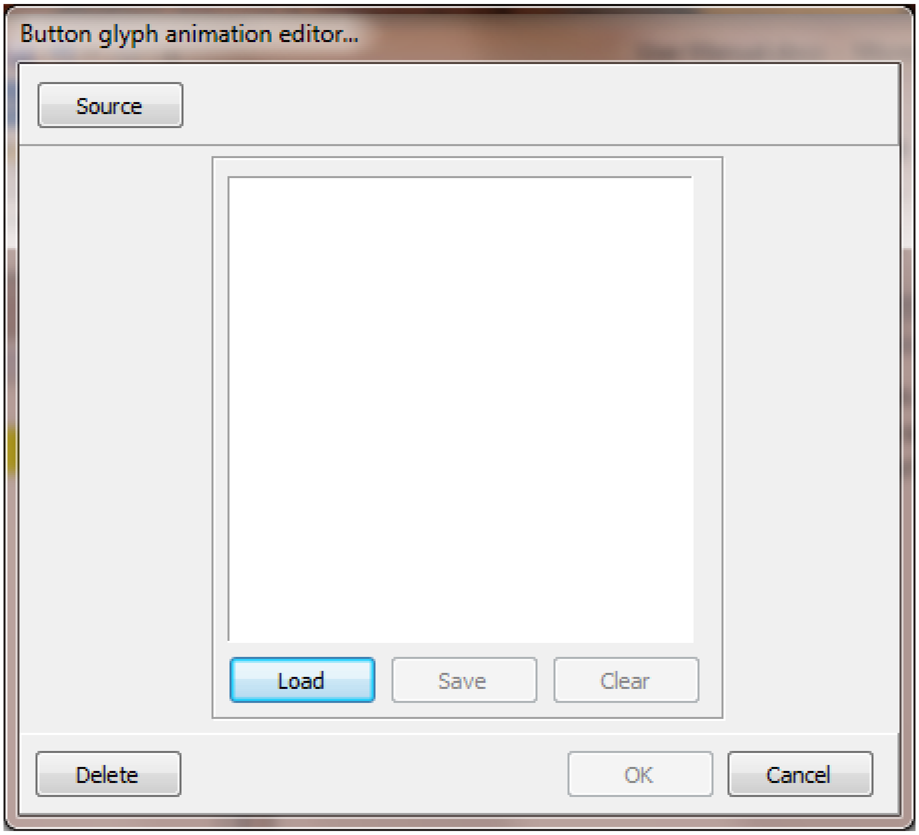
	FG Color	BG Color	Style	Transparent
True	🟥		🟥	☐

☐ Flash

Value	Comparison	FG Color	BG Color	Style	Transparent
90	Greater Than	🟥		🟥	☐
80	Greater Than	🟥		🟥	☐
70	Greater Than	🟥		🟥	☐
60	Greater Than	🟥		🟥	☐
50	Greater Than	🟥		🟥	☐
40	Greater Than	🟥		🟥	☐
30	Greater Than	🟥		🟥	☐
20	Greater Than	🟥		🟥	☐
10	Greater Than	🟥		🟥	☐

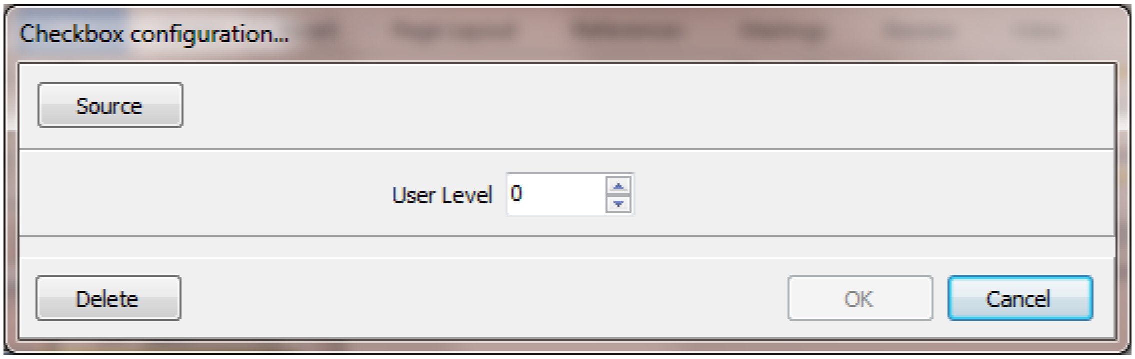
This is used to configure the objects brush attributes. The foreground and background color, style and transparent state can be configured. When the source is digital, the flash attribute can be enabled. When enabled and the source value is true the brush will flash between the design time and animation settings.

BUTTON GLYPH


Button glyph animation editor...
Source
Load
Save
Clear
Delete
OK
Cancel

If the button has a glyph, the glyph selected at design time will be displayed if the source tagname/item is false, the glyph selected for animation will be displayed if the source tagname/item is true.

CHECKBOX

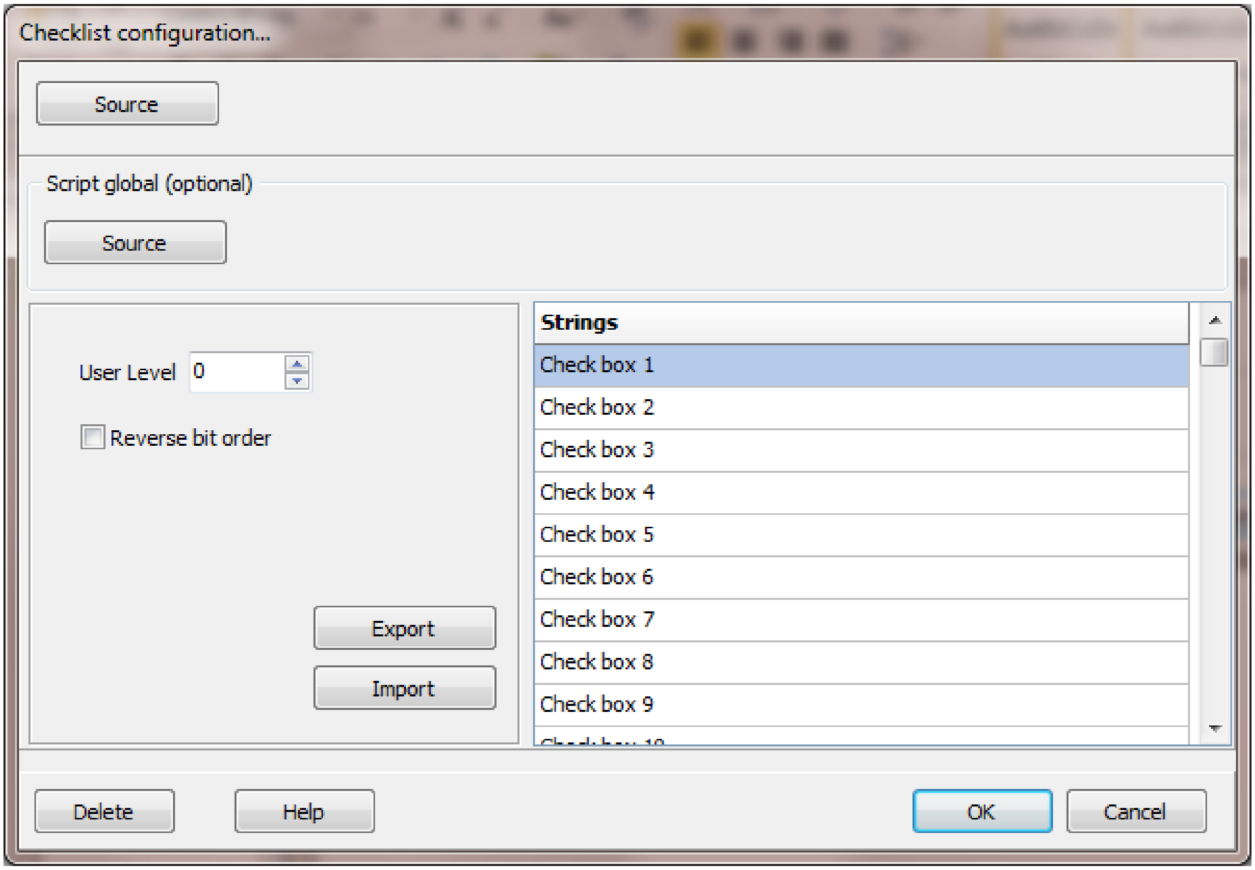

Checkbox configuration...
Source
Delete
OK
Cancel

User Level 0

Source

The source must be a digital type tag.

CHECKLIST


Checklist configuration...
Source
Script global (optional)
Source
Export
Import
Delete
Help
OK
Cancel

User Level 0

☐ Reverse bit order

Strings
Check box 1
Check box 2
Check box 3
Check box 4
Check box 5
Check box 6
Check box 7
Check box 8
Check box 9

Source

The source must be a analog type tag.

String source (optional)

The checklist strings can be configured via the static editor at configuration or at runtime the checklist strings can be loaded from the selected script global section when the window is opened. The section is selected at configuration.

The names in the section must be 1 - 16. <section name>.1, <section name>.2 ... <section name>.16.

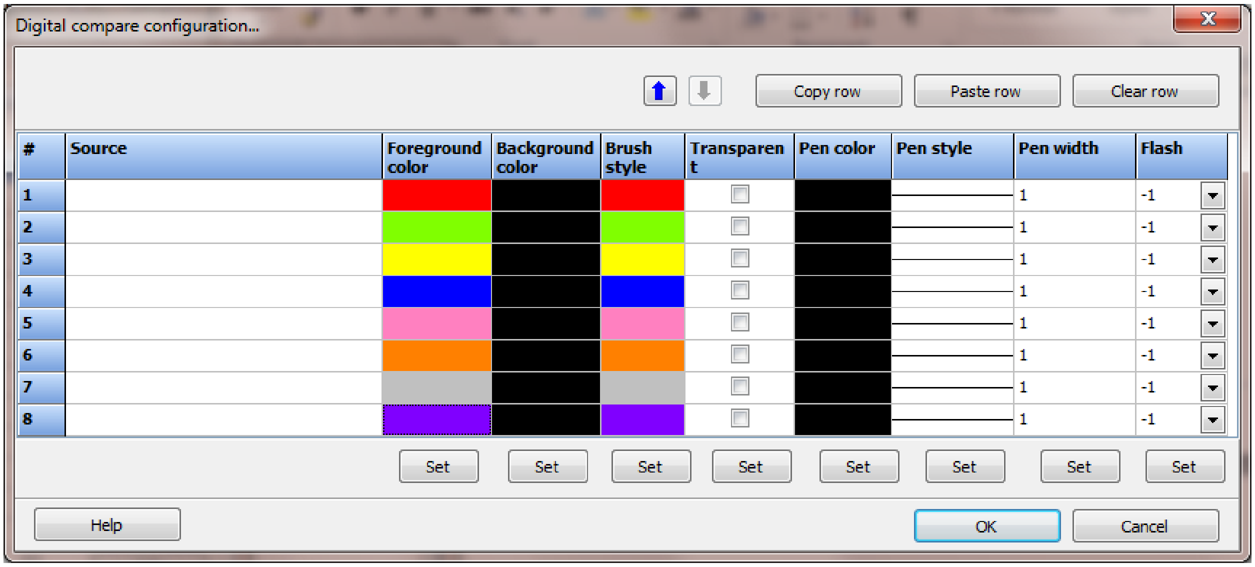
When a script global is used:
1. The 'Row count' above is ignored. The number of rows is determined by the highest number name in the section. (16 maximum)
2. A missing name does not delete a checkbox. The highest number in the section determines the row count.
3. If the bit order cannot match the checkbox order, use an 'Analog Host' point as the source and call a script in the 'On Mouse Up' animation to do any needed processing of the bit order. The 'On Mouse Up' animation is called after the source point is updated.

Warning: If the source point is located in an external device, the data might not have been written to the device before the 'On Mouse Up' animation is called.

Reverse bit order

The normal bit order is left to right, 15, 14, 13, etc. Checkbox 1 is the top.
Checkbox 1 = bit 0
Checkbox 2 = bit 1
Checkbox 3 = bit 2
...
If this attribute is enabled the bit order is reversed. From left to right, 0,1,2,3, etc.
Checkbox 1 = bit 15
Checkbox 2 = bit 14
Checkbox 3 = bit 13

DIGITAL COMPARE



#	Source	Foreground color	Background color	Brush style	Transparent	Pen color	Pen style	Pen width	Flash
1		🟥	⬛	🟥	☐	⬛	—	1	-1
2		🟩	⬛	🟩	☐	⬛	—	1	-1
3		🟨	⬛	🟨	☐	⬛	—	1	-1
4		🟦	⬛	🟦	☐	⬛	—	1	-1
5		🩷	⬛	🩷	☐	⬛	—	1	-1
6		🟧	⬛	🟧	☐	⬛	—	1	-1
7		⬜	⬛	⬜	☐	⬛	—	1	-1
8		🟪	⬛	🟪	☐	⬛	—	1	-1

When the animation is executing it starts at row one (1) and continues down the rows searching for a true condition. If a true condition is found the attributes for the row are applied to the graphic element and scanning stops. If the source field is blank scanning stops and the design time attributes are applied to the graphic element. If a true condition is not located the design time attributes are applied to the graphic element.

Source

The digital item used to select the row attributes. The tag type can be analog or digital. The item type must be digital. The rows are scanned top to bottom. If a source is not present for a row the scanning stops. A row that does not have a source can be used for flash values, see below, but logic scanning for a true value stops when a true value is found or the source is blank.

Foreground color/Background color/Brush Style/Transparent

The brush settings.

Pen color/Pen style/Pen width

The pen settings.

Flash

If the source value is true the configured attributes are applied to the graphic element. This field is a value between -1 and 8.

-1	No Flash
0	Configuration attributes
1 - 8	Row 1 - 8

When -1 is selected flash is disabled.
When 0 is selected the attributes applied to the graphic element will toggle between the settings for the row and the design time settings.
When the value is 1 - 8 the attributes applied to the graphic element will toggle between the settings for the row and the number of the row selected. The selected row does not need to contain a source address.

Example 1:
Row one is used for a valve closed indication and is set to red.
Row two is used for a valve opened indication and is set to green.
Row three is used for a jog indication and is set to green. The flash is set to 1. When row three is true the graphic element will flash from red to green.

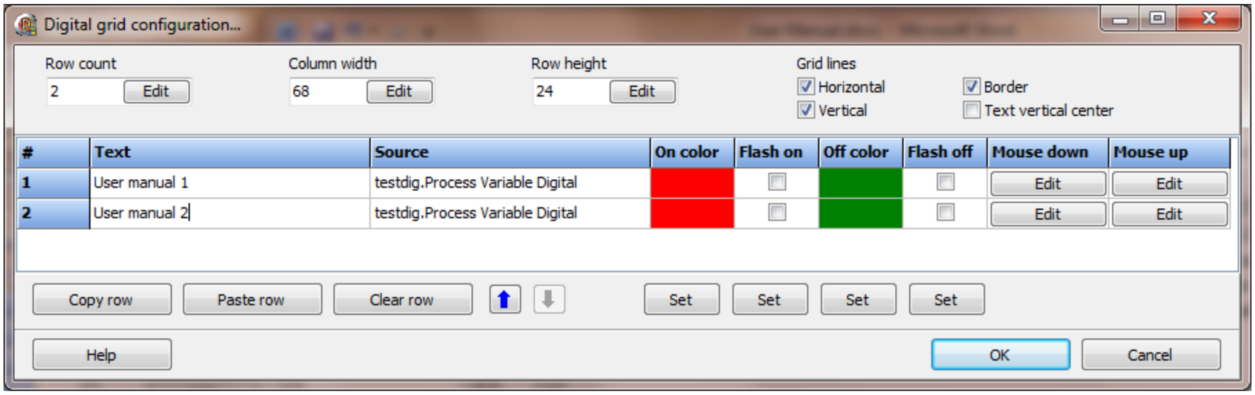
Example 2:
Row one is used for a motor running indication and is set to green.
Row two is used for a motor stopped indication and is set to red. The flash is set to 8. Row eight does not have a source but the color is set to yellow. When row two is true the graphic element will flash from red to yellow.

Example 3:
Row one is used for a motor running indication and is set to red. The flash is set to 0. When row one is true the graphic element will flash from red to the design time settings. For this example, if the only the brush or pen is used it might be easier to use the brush or pen animation. If both the brush and pen are animated this animation is easier.

Set

When the "Set" is selected for a column a dialog will appear allowing for a selection that will be applied to all rows or the value of the first row will be applied to all rows.

DIGITAL GRID


Digital grid configuration...

Row count: 2

Column width: 68

Row height: 24

Grid lines: ☑ Horizontal ☑ Vertical ☑ Border ☐ Text vertical center

#	Text	Source	On color	Flash on	Off color	Flash off	Mouse down	Mouse up
1	User manual 1	testdig.Process Variable Digital	🟥	☐	🟩	☐	Edit	Edit
2	User manual 2	testdig.Process Variable Digital	🟥	☐	🟩	☐	Edit	Edit

The grid contains rows of text and a indicator rectangle. The "Set" button below the On and Off Color columns will display a color selection dialog. If "OK" is selected the color will be set for all the rows. The "Set" button below the Flash On and Off column will set all the checkboxes in the column to the state of the check box in the first row.

Notes:

1. The foreground color is the text color.
2. Transparent is not applicable to this object.
3. When setting the user level for mouse actions the level selected applies to all rows.

Row count

The number of rows in the grid. (1 - 128)

Column width

The width of the indicator column. (4 - 512) The text column is the remainder of the width of the gird.

Row height

The height of each row. (4 - 512)

Grid lines

Horizontal, Vertical, Border. If enabled the grid/border lines will be displayed.

Text vertical center

The text will be centered in the cell. Otherwise, the text will be aligned at the top of the cell.

For each row

Text

The text to display in the first column

Source

The source point must be a host digital or host digital pointer.

On color

The color of the indicator column when the source is true.

Flash on

If the source is true and this is enabled the indicator will flash between the on color and off color.

Off color

The color of the indicator column when the source is false.

Flash off

If the source is false and this is enabled the indicator will flash between the on color and off color.

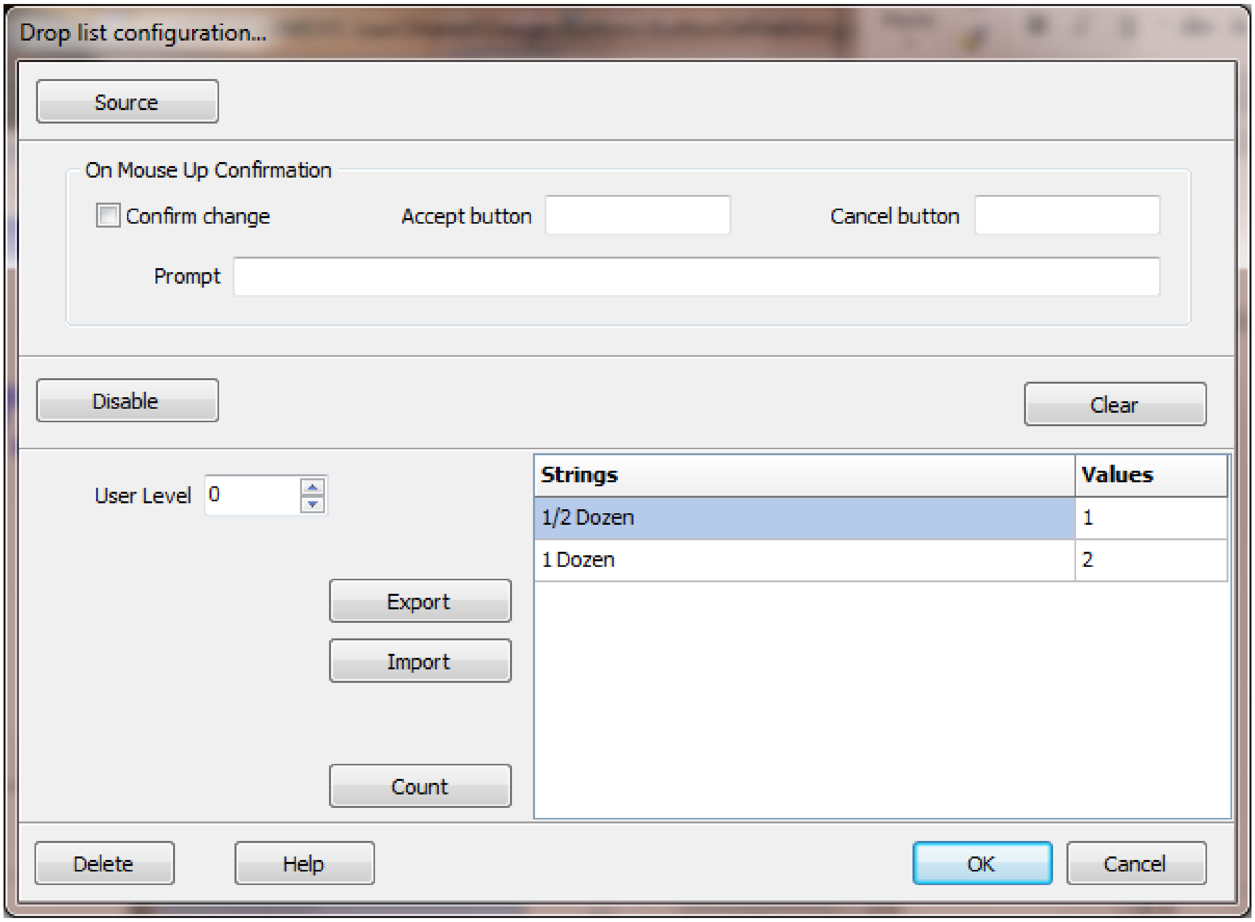
Mouse down

This provides for mouse commands when the left mouse button is pressed in the indicator for the row.

Mouse up

This provides for mouse commands when the left mouse button is pressed and released in the indicator for the row.

Drop List


Drop list configuration...
Source
On Mouse Up Confirmation
Accept button
Cancel button
Prompt
Disable
Clear
Export
Import
Count
Delete
Help
OK
Cancel

☐ Confirm change

User Level 0

Strings	Values
1/2 Dozen	1
1 Dozen	2

Source

The source point must be an analog type. The user entered value is stored in the source. The point must be "read/write" for proper operation.

On Mouse up confirmation

If configured this option is called anytime the left mouse button goes up after being pressed in the control. If the mouse pointer is outside the control rectangle the value is not changed and the On Mouse Up animation is not called. If the "Confirm Change" checkbox is checked a confirmation window will appear. If the user selects the "accept" button the On Mouse Up animation is called. If the user selects the "cancel" button the On Mouse Up animation is not called and the list item is restored to the previous value.

Disable

Select a point to prevent the user changing the selection. If the value of "source" changes, the control will reflect the change.

Strings

These are the strings that appear in the list.

Values

The value of "source" is compared to the values in the list. When a match is found the value of the corresponding string is shown in the control. If a value match is not found the content is not specified.

Export

This exports the string grid as a two column comma separated file.

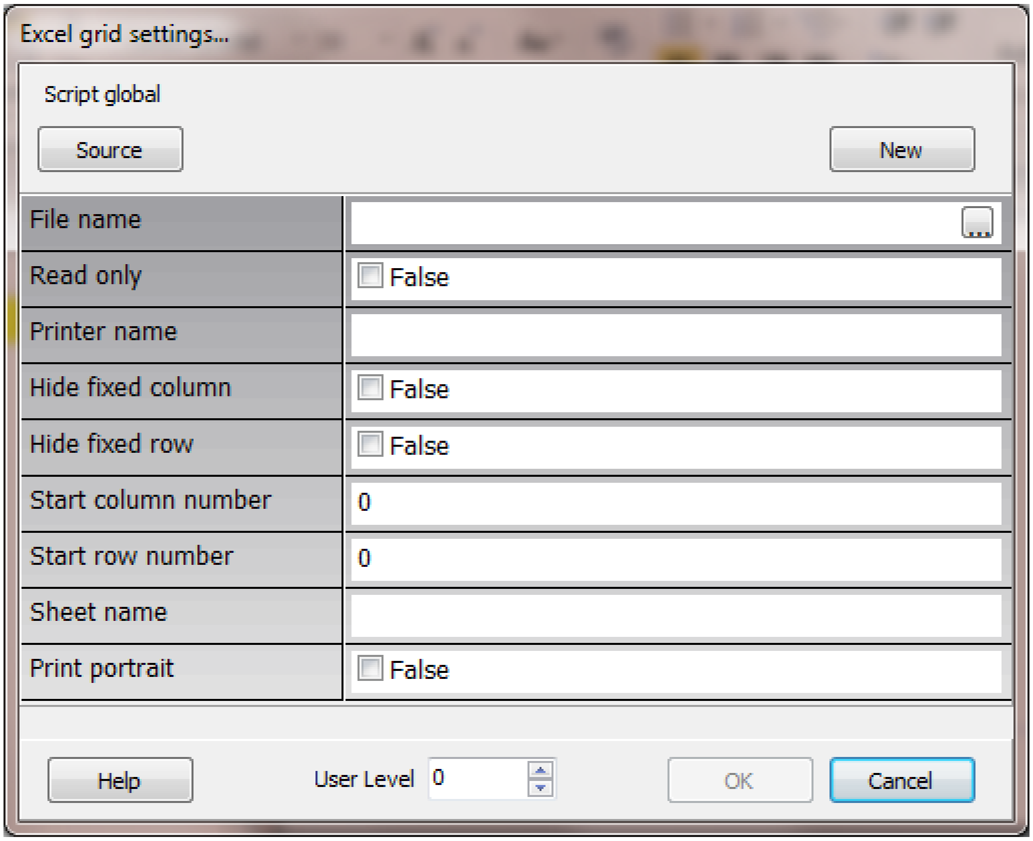
Import

This will import a two column comma separated file to the string grid.

Count

This is the number of strings/values in the list. (1 - 32767)

EXCEL GRID



File name	
Read only	☐ False
Printer name	
Hide fixed column	☐ False
Hide fixed row	☐ False
Start column number	0
Start row number	0
Sheet name	
Print portrait	☐ False

User Level 0

This is a string grid used to display/edit the contents of an Excel file. Excel is not required to be installed on the computer. This grid does not use Excel so it can not perform macros or calculations. The object uses a 'script global' section to control and report operation.

Note: A grid exported to XLS might contain some visual differences. For example, a date field displayed as '27-Jun' might appear as '6/27/2012'. A negative value '(87.50)' might appear as '-87.5'. The data will be correct.

Item names

File name

This is the complete path and file name for the Excel file. This can be a shortcut and will be resolved.

Notes:
1) Only XLS files are supported.
2) Do not use this graphic element to view or edit a file that is in use by one of the ODBC ports.

Read only

If 'True' the grid cannot be edited. If 'False' the grid can be edited. Any changes to the text of the grid are not saved to disk until a 'Save' command is executed.

Printer name

If blank, the default printer is used. If not blank the name entered is the name of the printer to use when the print command is executed.

Hide fixed column

If 'True' the first column will be a regular column If 'Read only' is not true the column will be editable.

Hide fixed row

If 'True' the first row will be a regular row. If 'Read only' is not true the row will be editable.

Start column number

This is the column in the XLS file to start the load or save.

Start row number

This is the row in the XLS file to start the load or save.

Sheet name

The 'sheet name', in the XLS file, to import or export. If the name is blank the default sheet is used.

Print portrait

The default printing orientation is 'landscape'. If this is enabled the output will be in 'portrait' orientation.

Status

This field is used to report the status of grid commands. If the command was successful the status will be blank. If the command fails the status will be 'Exception occurred'.

Changed

This field is used to indicate if at least one field of the grid has been edited and not saved. If 'True' at least one field has been edited and not saved to disk. If 'False' editing, has not occurred. When a 'save' command is executed this field is set to 'False'.

Command

These are the commands used to control the operation of the grid. The command text must match exactly (case sensitive) to the commands listed below. When the command begins to execute the 'Status' field will be updated and this item will be cleared.

Load

This loads the grid from the file in the 'Filename' field above. When the grid is first displayed this command is automatic. If this command is called the current contents of the grid are discarded and the file contents are loaded.

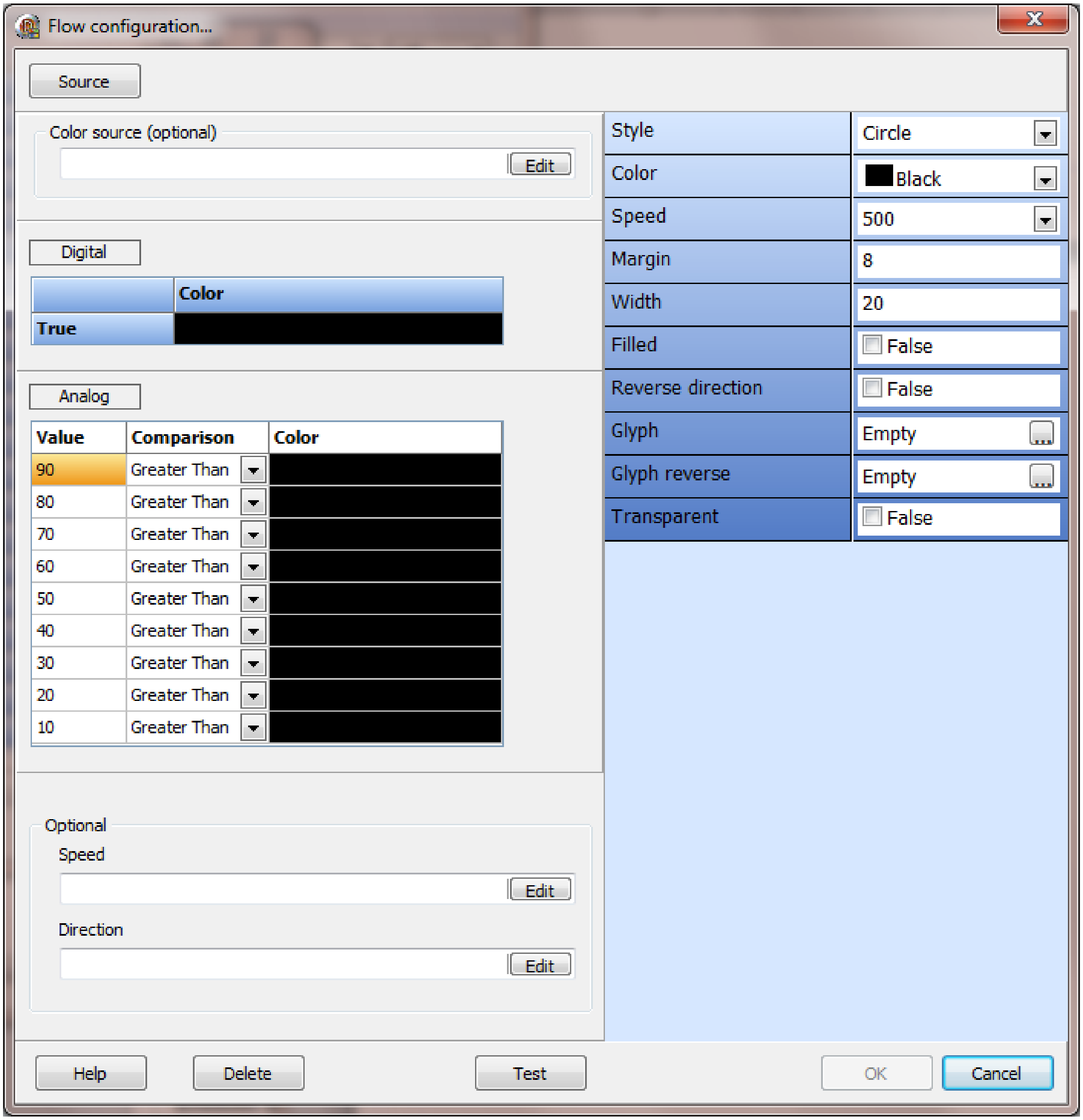
Save

This saves the grid contents to the file in the 'Filename' field above. If the file exists it is overwritten. If the file does not exist it is created. If the path to the file does not exist the command will fail.

Print

This prints the grid contents to the printer selected in the 'Printer name' field above.

Flow



Color source (optional) Edit

	Color
True	■

Value	Comparison	Color
90	Greater Than	■
80	Greater Than	■
70	Greater Than	■
60	Greater Than	■
50	Greater Than	■
40	Greater Than	■
30	Greater Than	■
20	Greater Than	■
10	Greater Than	■

Optional

Speed Edit

Direction Edit

Style	Circle
Color	■ Black
Speed	500
Margin	8
Width	20
Filled	☐ False
Reverse direction	☐ False
Glyph	Empty
Glyph reverse	Empty
Transparent	☐ False

This graphic animation is used to show flow in a vertical or horizontal rectangle. The attributes on the right side of the window are the static settings and some attributes can be overridden by dynamic configurations.

Not all settings apply to all styles.

If the width of the rectangle is greater than the height the flow will be horizontal, otherwise it will be vertical.

The "Test" button uses the static settings to simulate the animation.

Source

A digital reference used to display the flow animation or the rectangle without flow using the design time settings.

Static settings

Style

The type of indicator in the rectangle to represent flow.

Color

The color of the indicator selected. These settings do not apply if the style is "glyph".

Speed

A value between 50 and 2000 milliseconds, in 50 millisecond increments, that controls the "flow rate" in the element. Shorter time is faster flow.

Margin

The flow indicator is centered in the rectangle. This value is used to create a "gap" between the indicator and the rectangle sides. The value is applied to both sides of the rectangle.

Width

The width of the selected indicator. The height is set by the size of the rectangle minus the margin.

Filled

If enabled and the style supports "filling" the indicator will be filled with the selected color. This does not apply to bitmaps.

Reverse direction

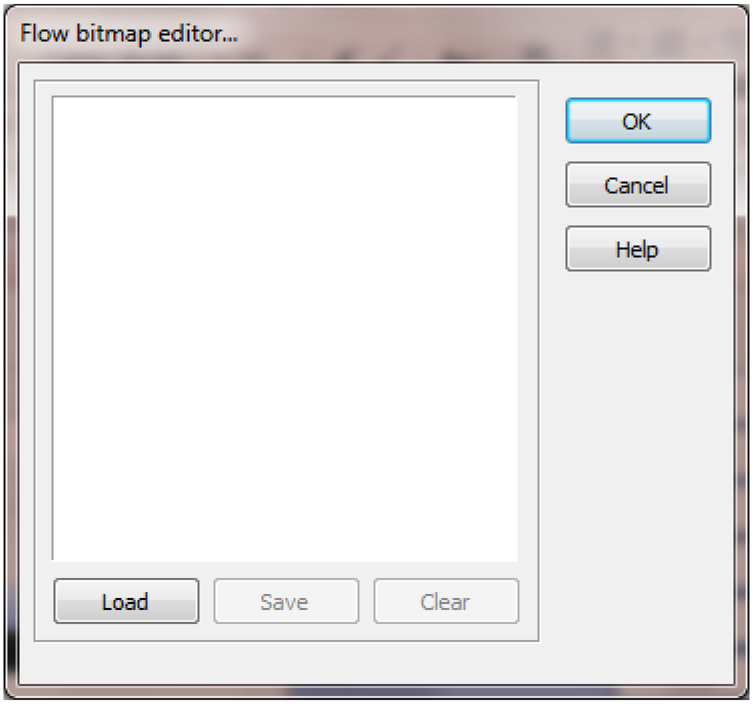
The normal flow indication is left to right or top to bottom. If this is enabled the flow will be right to left or bottom to top.

Glyph/Glyph reverse

A user created symbol can be used. If required, if "Glyph reverse" is not selected the selected "glyph" will be "flipped" and used for the reverse direction.

Note: If the flow is vertical and the glyph indicates direction, create the glyphs on the horizontal plane. The program will rotate the glyphs for the correct flow direction.

Glyph editor



This is used to select a glyph.

Transparent

Only applies if the style is "Glyph".

All of the following attributes are optional.

Color source

If the point.item is digital the false color will be the static color and the true color will be the selected color.

If the point.item is analog the comparison will select the color and the static color is not used.

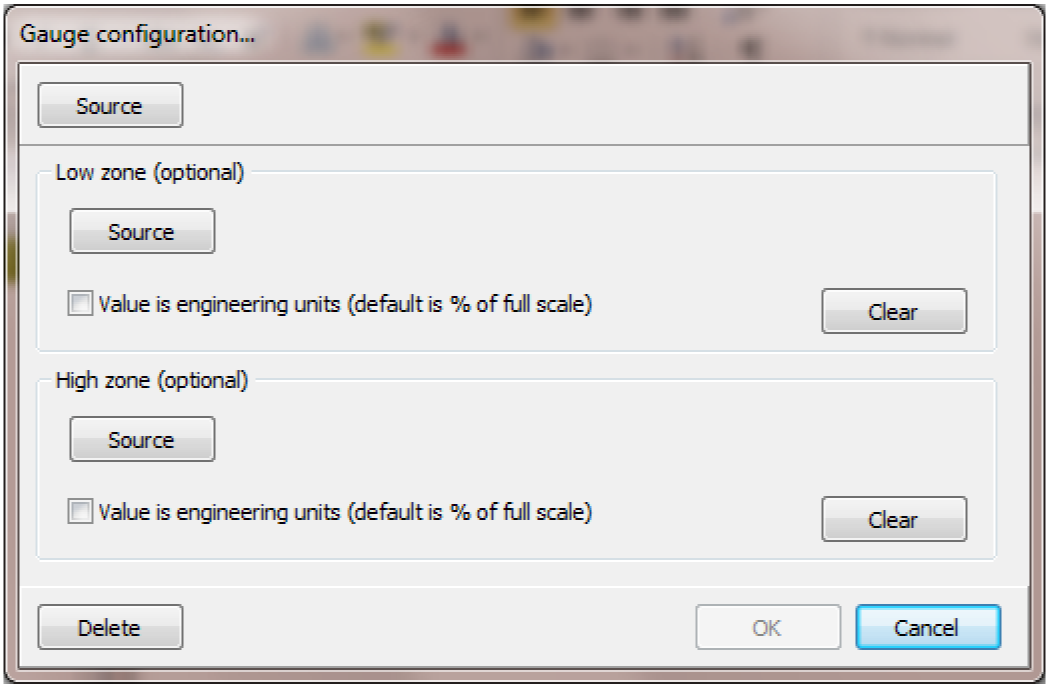
Speed

The selected point.item will determine the speed. The value is limited between 50 and 2000 milliseconds, in 50 millisecond increments. A value outside the limits of 50 - 2000 defaults to 500.

Direction

A true value "toggles" the static direction; a false value is the static direction.

GAUGE



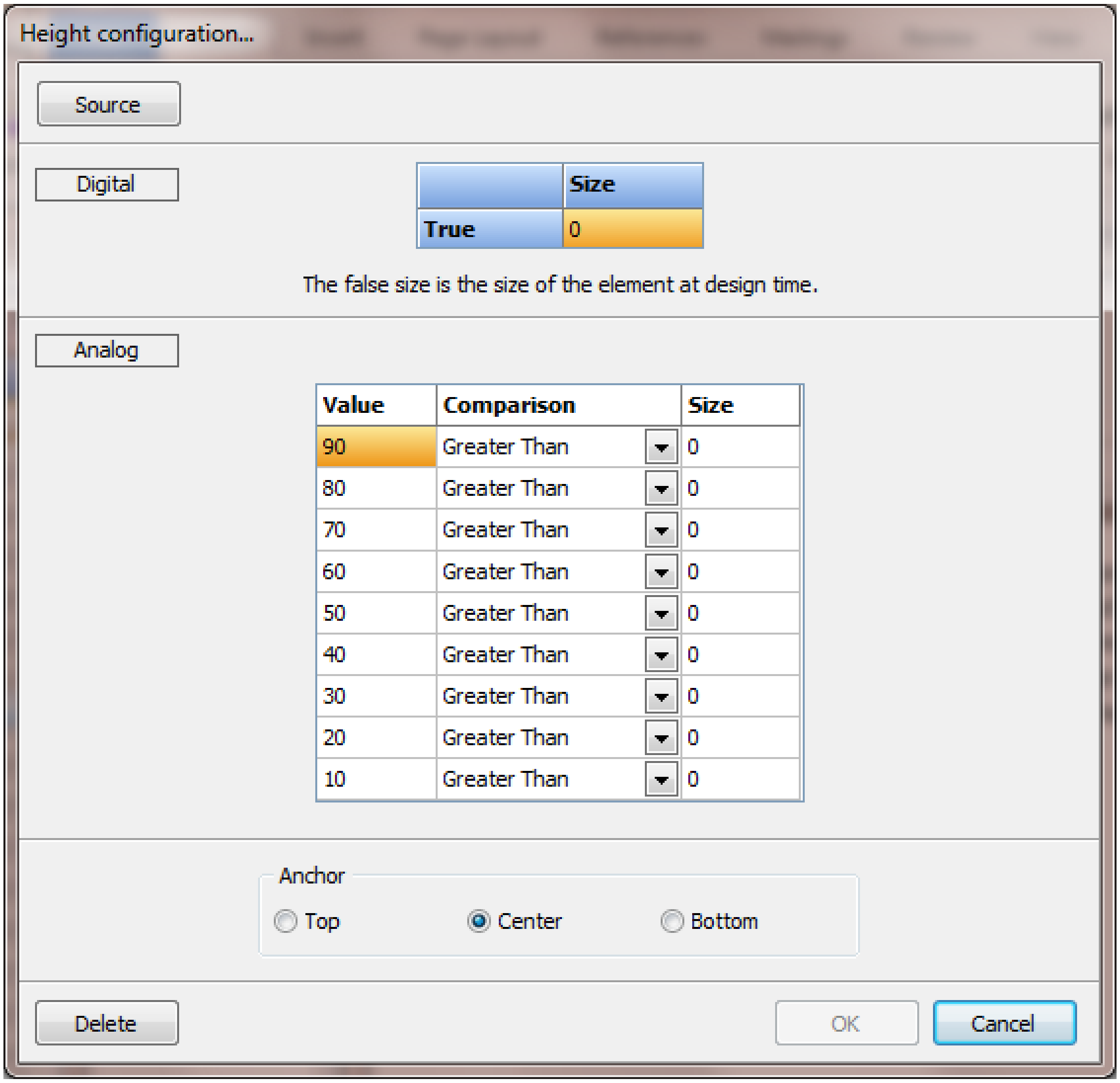
Gauge configuration...

☐ Value is engineering units (default is % of full scale)

☐ Value is engineering units (default is % of full scale)

This is an analog gauge. Select the analog tagname.item to monitor. Some gauges have a scale that is colored to show when the value is 'in range', a low zone and high zone. For example, the low zone might be yellow, and the high zone might be red. The area between the two zones is green. The optional zone fields are to allow the zone range to change based on a tag value. The default for the value is percent of full scale. Enabling the check box for the source value allows the source to be in engineering units.

HEIGHT



Height configuration...
Source
Digital
Analog
Delete
OK
Cancel

	Size
True	0

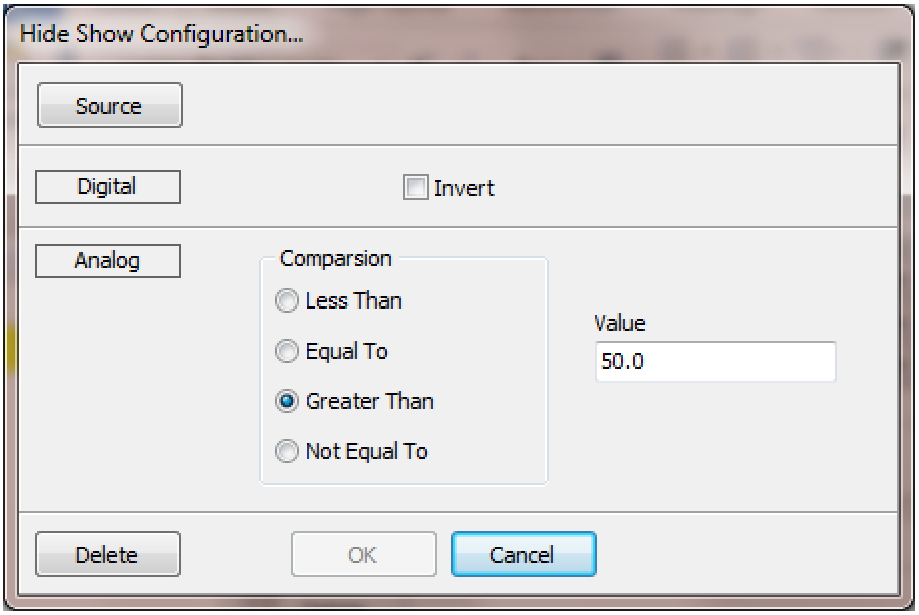
The false size is the size of the element at design time.

Value	Comparison	Size
90	Greater Than	0
80	Greater Than	0
70	Greater Than	0
60	Greater Than	0
50	Greater Than	0
40	Greater Than	0
30	Greater Than	0
20	Greater Than	0
10	Greater Than	0

Anchor
○ Top ● Center ○ Bottom

This is used to configure the height of an object.

HIDE/SHOW



Hide Show Configuration...

☐ Invert

Comparsion

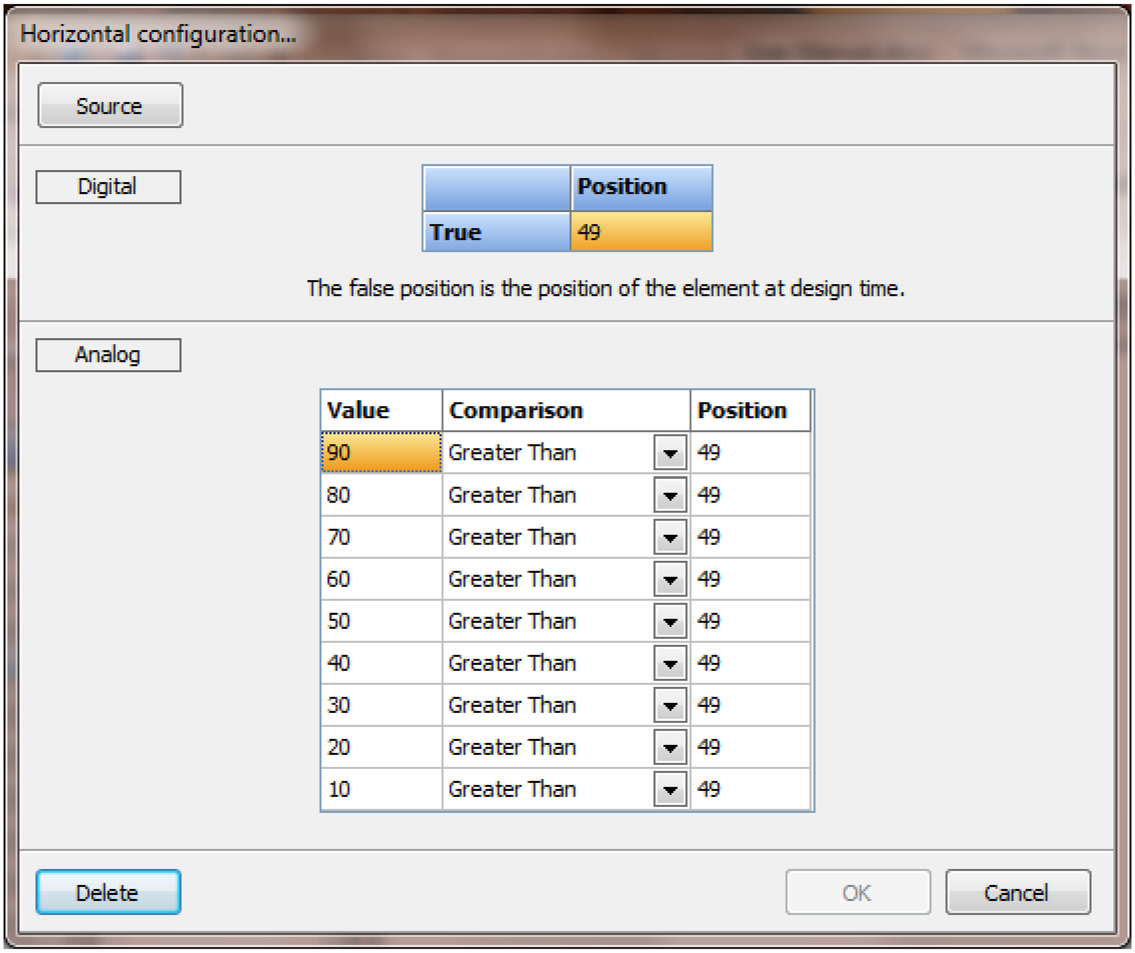
○ Less Than
○ Equal To
● Greater Than
○ Not Equal To

Value
50.0

Source
Digital
Analog
Delete
OK
Cancel

This causes an object to be visible or hidden. If the object is hidden all other animations are not processed. When the condition is true the graphic element is hidden.

HORIZONTAL POSITION


Horizontal configuration...
Source
Digital
Analog
Delete
OK
Cancel

	Position
True	49

The false position is the position of the element at design time.

Value	Comparison	Position
90	Greater Than	49
80	Greater Than	49
70	Greater Than	49
60	Greater Than	49
50	Greater Than	49
40	Greater Than	49
30	Greater Than	49
20	Greater Than	49
10	Greater Than	49

This is used to configure the horizontal position of an object.

IMAGE LIST

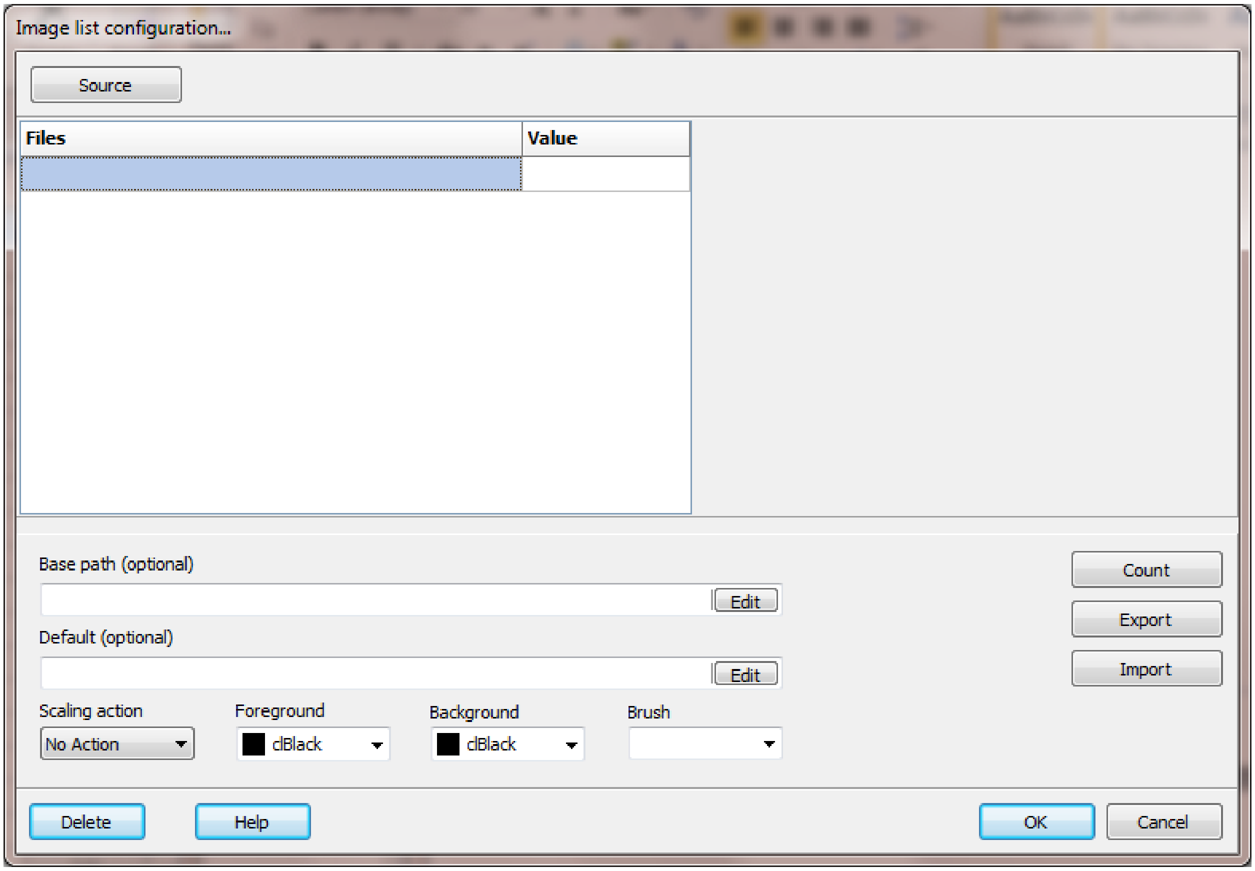


Image list configuration...
Source
Files
Value
Count
Export
Import
Edit
Edit
Delete
Help
OK
Cancel

Base path (optional)

Default (optional)

Scaling action: No Action

Foreground: clBlack

Background: clBlack

Brush:

Source

The source point.item must be an analog type. The user entered value is stored in the source.

Files

These are the files containing the images to display. The file must be a fully qualified path. See the "base" below to use a prefix.

Values

The value of "source" is compared to the values in the list. When a match is found the value of the corresponding file is displayed. If a value match is not located, the default image is displayed. If the default image is not configured or does not does not exist, an image is not displayed

Base (optional)

This is an optional base path for the location of the image files.
Each file could be a full path:

Files Value	
C:\images\project 1\A.bmp	1
C:\images\project 1\B.bmp	34
C:\images\project 1\C.bmp	45

Or the base parameter could be set to "C:\images\project 1\" and then the file entries could be:

Files	**Value**
A.bmp	1
B.bmp	34
C.bmp	45

Default (optional)

This is a path to the image to display if the source value does not match a configured value. If this field is blank and a value does not match, an image will not be displayed.

Scaling action

The display size of the file image might not be the same size as the image in the window. This provides direction on how the image should be displayed

No Action:
The image will be imported into the window and centered graphic element.

Crop:
The image will be aligned to the top/left of the graphic element and if the image is larger than the client area of the graphic element the bottom and right will be cropped to fit the graphic element.

Expand, Shrink:
The image will be expanded or shrunk to fill the area of the graphic element.

Foreground color

This is the color of the fill when the image does not fill the rectangle.

Background color

This is the color of the fill when the image does not fill the rectangle.

Brush

This is the brush used to fill the rectangle when the image does not fill the rectangle.

Count

This is the number of files/values in the list. (1 - 32767)

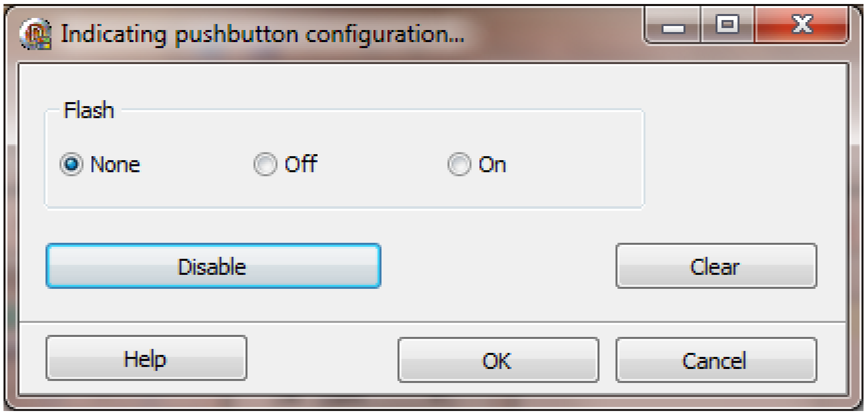
Export

This exports the string grid as a two column comma separated file.

Import

This will import a two column comma separated file to the string grid.

INDICATING PUSHBUTTON



Flash

● None ○ Off ○ On

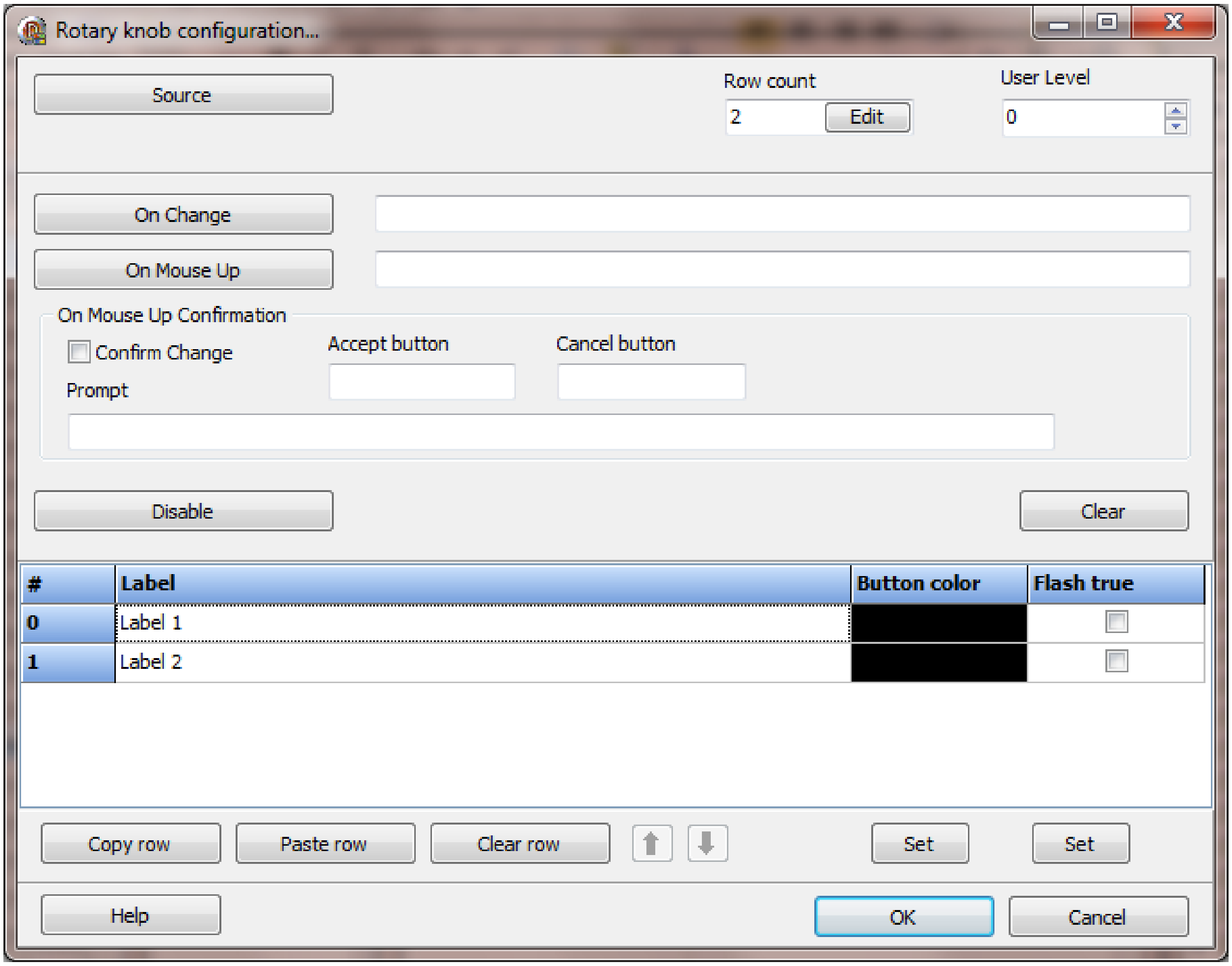
Flash

If 'Off' or 'On' is selected the LED will flash.
1. The pen animation must be valid and enabled.
2. If the animation is digital the 'True' color and the design time color are used.
3. If the animation is analog and the 'state' is true the configured 'state' pen and the design time pen are used.
4. If the animation is analog and the 'state' is false the configured pen in the bottom row of the grid and the design time pen are used.

Disable

This is used to disable all mouse actions for the control. The indication is via the other animations.

KNOB SWITCH


Rotary knob configuration...
Source
On Change
On Mouse Up
On Mouse Up Confirmation
☐ Confirm Change
Accept button
Cancel button
Prompt
Disable
Clear
Copy row
Paste row
Clear row
Set
Set
Help
OK
Cancel

Row count: 2

User Level: 0

#	Label	Button color	Flash true
0	Label 1	■	☐
1	Label 2	■	☐

Source

The source point must be an analog or host analog pointer.

Row count

The number of switch positions.

User Level

The logged on user must have a user level equal to or greater than this value to activate the control.

On Change (Optional)

The script to execute when the switch position is changed.

On Mouse Up (Optional)

If configured this script is called anytime the left mouse button is released after having been pressed in the control. If the mouse pointer is outside the control rectangle the switch position is restored to the value when the mouse button was pressed. If the "Confirm Change" checkbox is checked a confirmation window will appear. If the user selects the "accept" button the script is called. If the user selects the "cancel" button the script is not called and the switch position is restored to the value when the mouse button was pressed.

Disable (Optional)

If this point is configured and the point value is true, changes to the switch by the user are disabled. Changes to the switch source tag will result always result in a change to the switch position. If disabled, the switch becomes an indicator only.

Each row

Label

The text to display at the position.

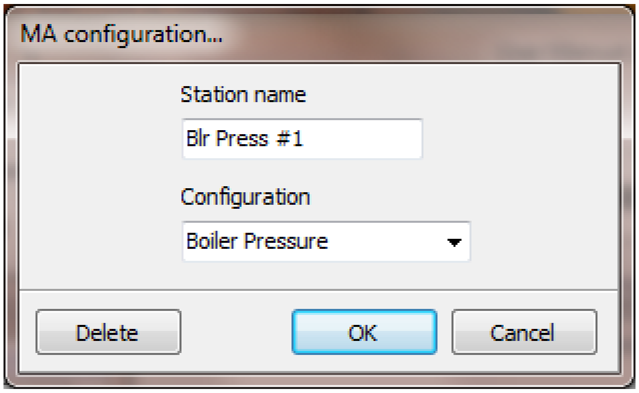
Button color

The color of the button.

Flash true

If enabled the button color will flash between the design time color and the button color when the switch is in this position.

MA STATION



Station name
Blr Press #1
Configuration
Boiler Pressure

The MA (Manual/Auto) is a compound object. This allows for setting a station name and default configuration. The configuration can be changed via scripting.

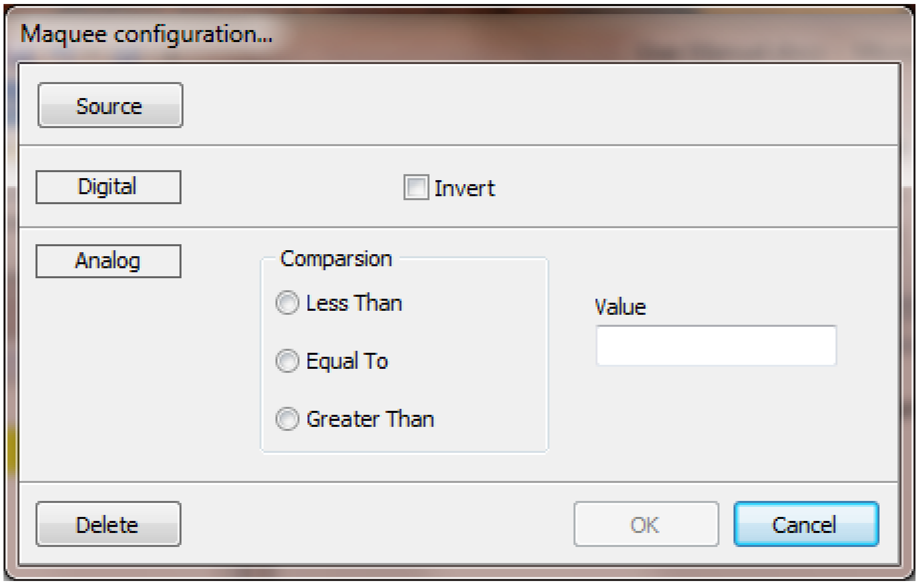
The name of the station is only a place holder for the configuration name. When a window opens it reads the assigned station name from the MA station graphic element and checks for the station name in a list of station name/configuration name pairs. If the station name is found it returns the configuration name and the station uses the configuration for operations.

If the name is not found it uses the configuration name selected at design time.

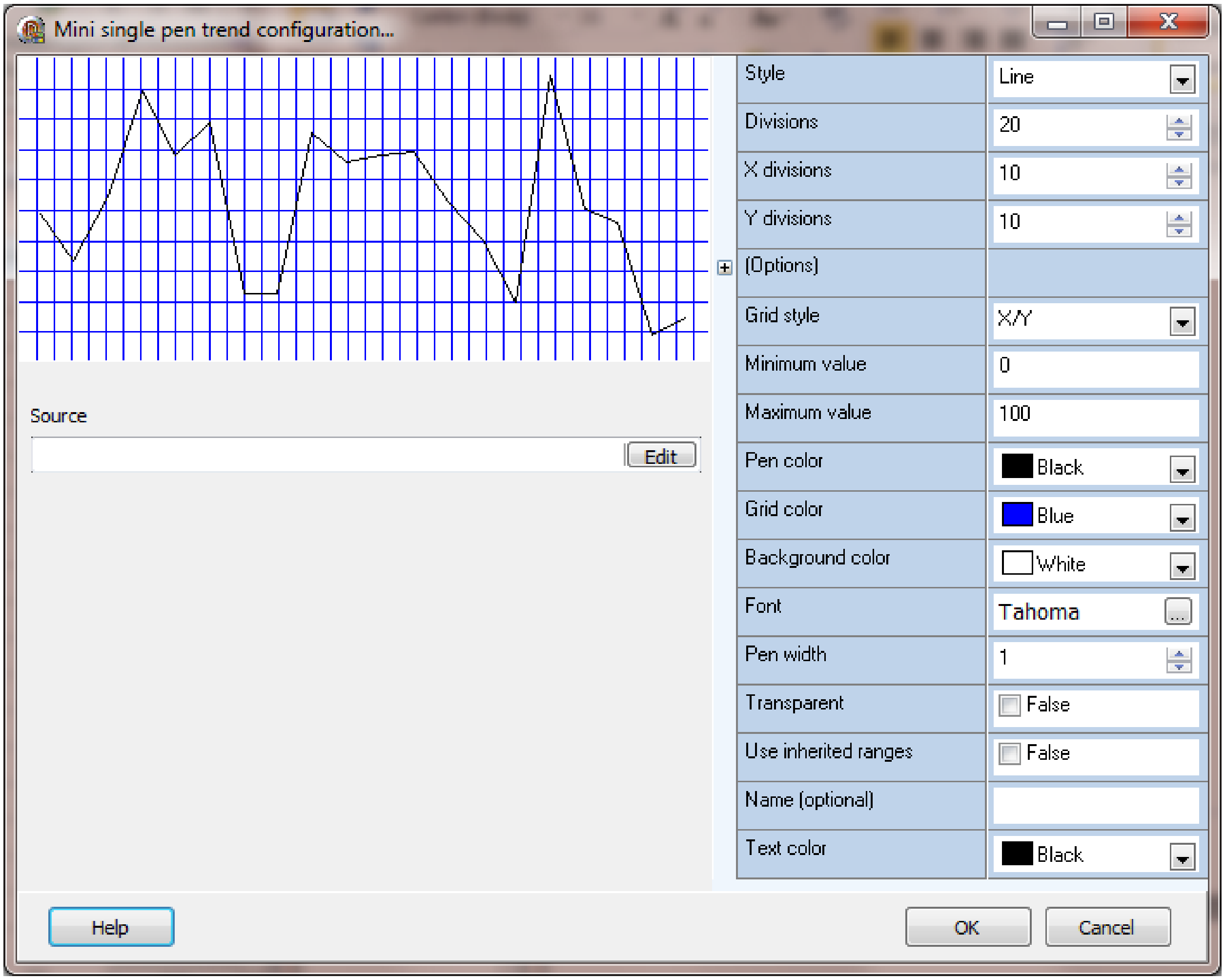
If via a script command the station name/configuration name is set then all stations with that station name will use the configuration set, when the window opens. This only applies when the window opens. After the window is open the station name/configuration name pair can be changed without change to existing open windows

As long as:
A. All stations have unique station names.
OR
B. The station name/configuration name pair is not modified via scripting.
OR
C. The station name/configuration name is always set, via scripting, before the window is open.
AND
D. The same station name is not used twice in the same window.

MARQUEE


Maquee configuration...
Source
Digital
☐ Invert
Analog
Comparsion
○ Less Than
○ Equal To
○ Greater Than
Value
Delete
OK
Cancel

MINI SINGLE PEN TREND



Style	Line
Divisions	20
X divisions	10
Y divisions	10
Grid style	X/Y
Minimum value	0
Maximum value	100
Pen color	Black
Grid color	Blue
Background color	White
Font	Tahoma
Pen width	1
Transparent	☐ False
Use inherited ranges	☐ False
Name (optional)	
Text color	Black

This graphic element displays the previous 2 - 100 seconds of a point as a trend.
Note: The 'Mini single pen trend enable" in the configuration settings must be enabled for points to store the values.

Style

The style of the trend. (Bar, Line, Scatter, 3D bar, Filled)

Divisions

The number of samples displayed. Default is 60.

X divisions

The number of vertical divisions on the grid. This is used to draw the grid lines. Lower numbers = more divisions = more vertical lines. The value is limited to the width of the trend.

Y divisions

The number of horizontal divisions on the grid. This is used to draw the grid lines. Lower numbers = more divisions = more horizontal lines. The value is limited to the height of the trend.

Options

These options apply when the "style" is "Bar or "3D bar"

Values	Display the value above the bar.
Transparent	Transparent text
Rotated	Rotate the text 90 degrees. (Does not apply to all fonts.)
No zeros	If the sample value is 0 the text will not be displayed.

Grid style

This attribute sets the grid lines.

None	No grid lines will be drawn.
X – Vertical	Only vertical lines.
Y – Horizontal	Only horizontal lines.
X/Y	Vertical and horizontal lines.

Minimum/maximum value

The minimum and maximum values for the grid.

Pen color

The color of the pen.

Grid color

The color of the grid lines. (Foreground color)

Background color

The background color of the grid.

Font

The font settings when the style is "Bar or "3D bar".

Pen width

The pen width when the "style" is "Line".

Transparent

The background color is not applied to the trend.

Used inherited ranges

This overrides the "Minimum/maximum value" above and uses the engineering minimum/maximum from the assigned point.

Brush color

The color of the brush.

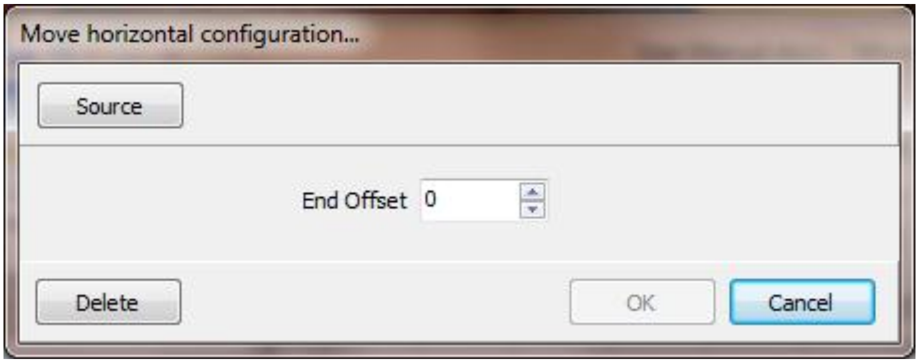
Name (Optional)

The name is used when a command to change a pen at runtime is executed. Trend names can be duplicated. If a change command is used, the first trend with a name matching the name in the command will be used for the command.

Text color

The color of the text when the trend style is "Bar or "3D bar".

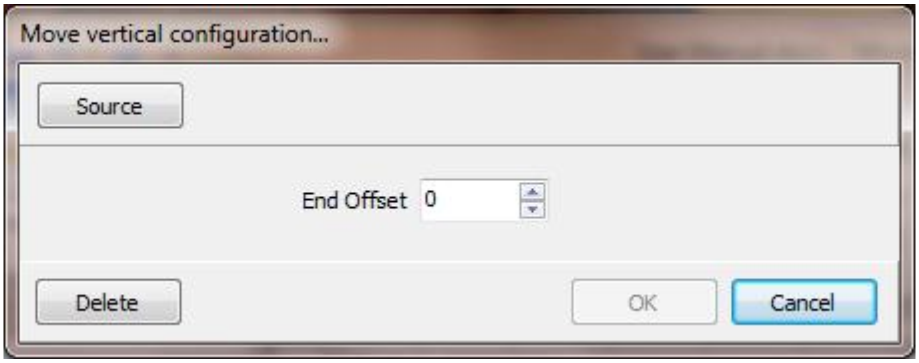
MOVE HORIZONTAL



End Offset 0

This is used to move an object horizontally from the design position to the offset position based on the “percent full scale” (PFS) of the selected analog point.

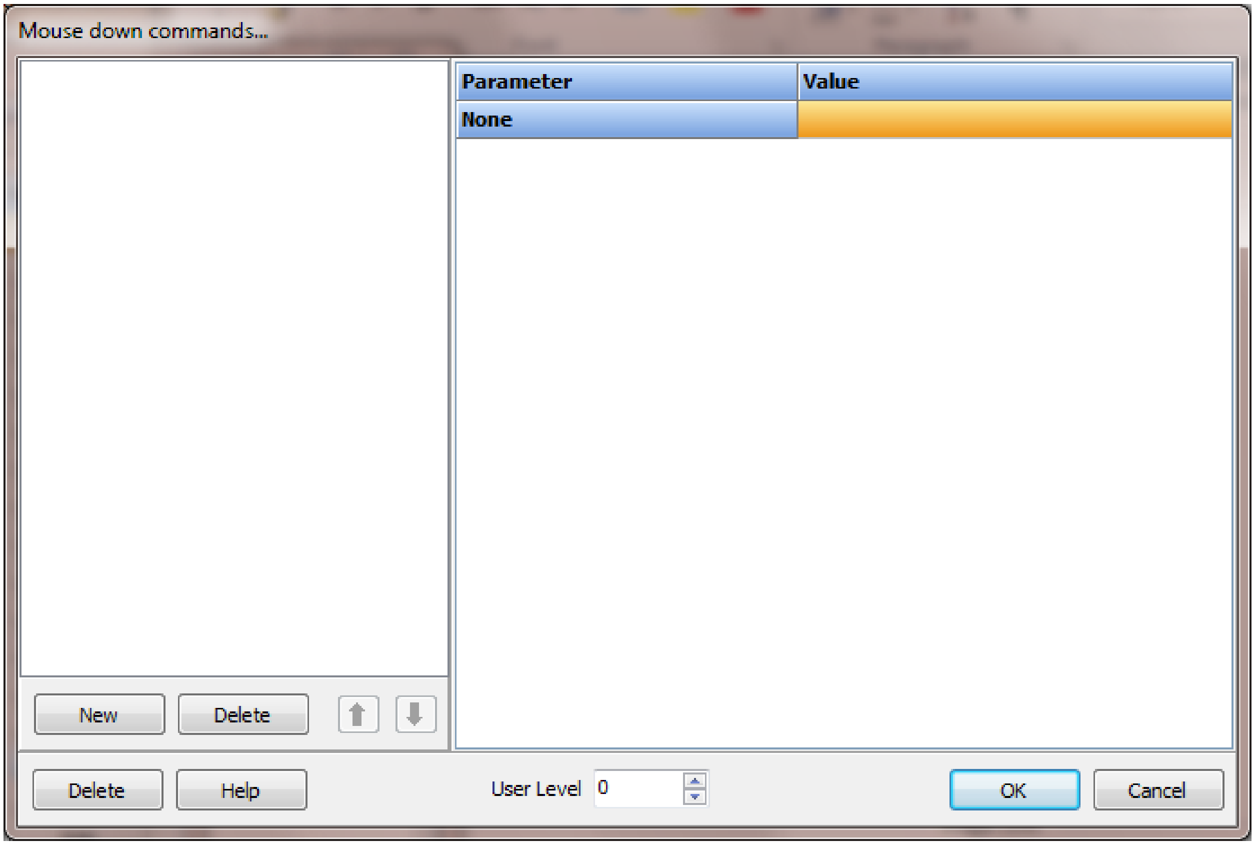
MOVE VERTICAL


Move vertical configuration...
Source
Delete
OK
Cancel

End Offset 0

This is used to move an object vertically from the design position to the offset position based on the “percent full scale” (PFS) of the selected analog point.

ON MOUSE DOWN

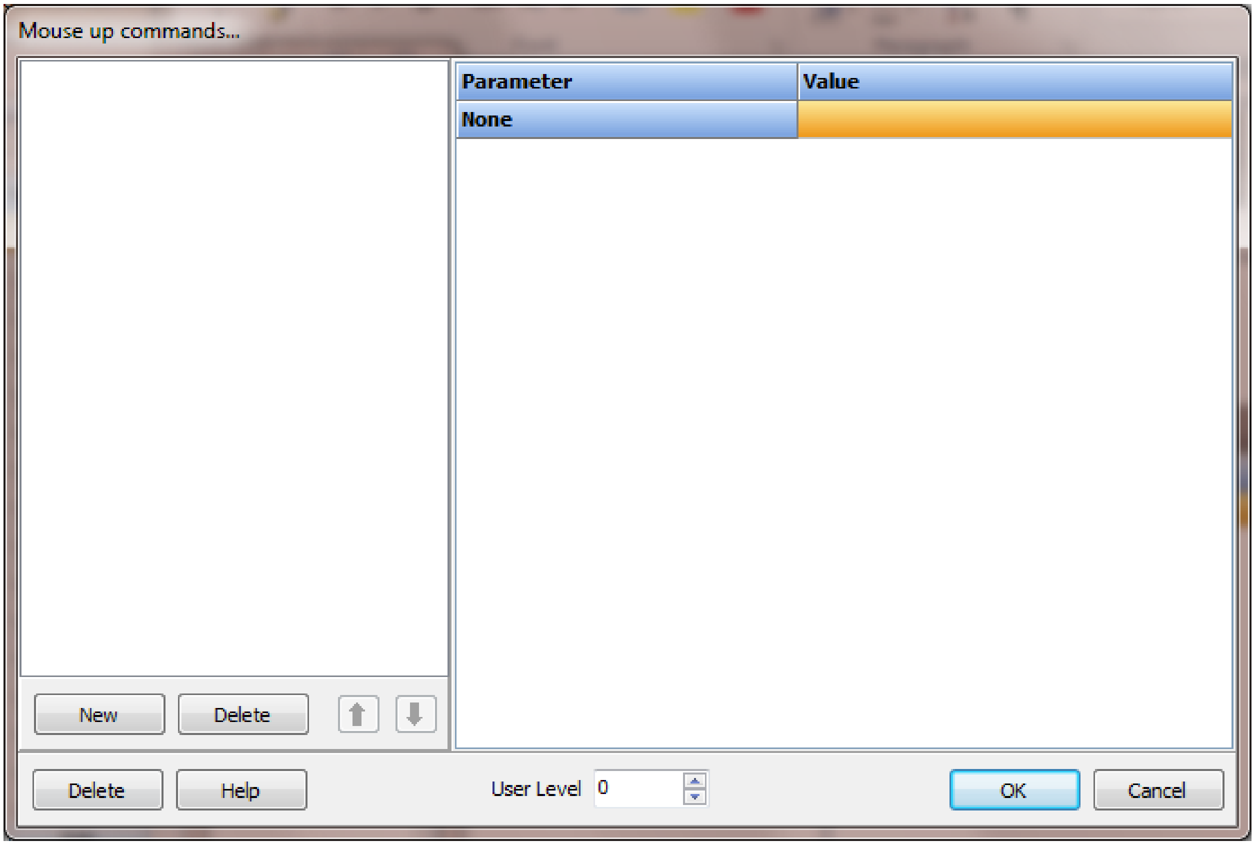

Mouse down commands...
New
Delete
Delete
Help
OK
Cancel

Parameter	Value
None	

User Level 0

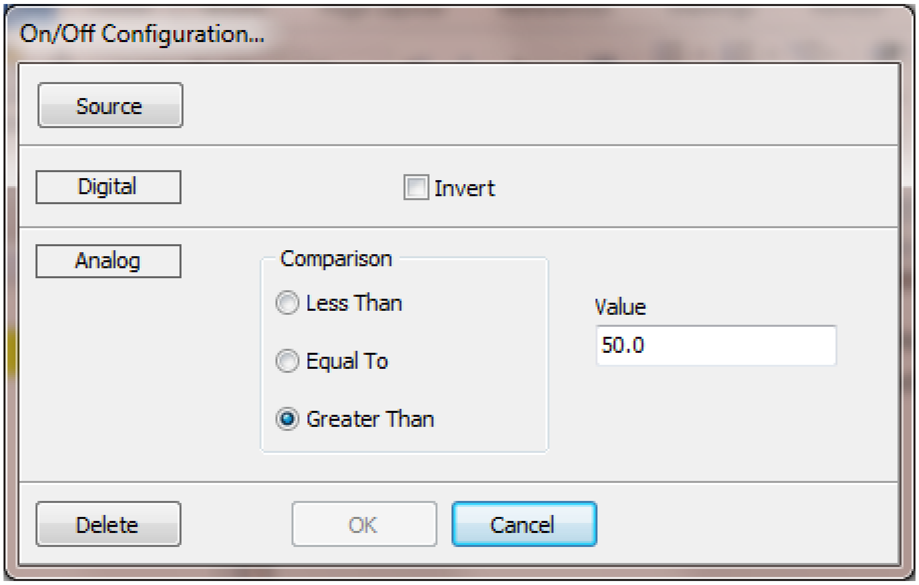
When the left mouse button is pressed in a graphic element the configured actions are executed. See the section on “Mouse Commands” for a description of all the mouse commands.

ON MOUSE UP


Mouse up commands...
Parameter
Value
None
New
Delete
Delete
Help
User Level
0
OK
Cancel

When the left mouse button is released (the same graphic element it was pressed in) in a graphic element the configured actions are executed. See the section on “Mouse Commands” for a description of all the mouse commands.

ON/OFF


On/Off Configuration...
Source
Digital
Analog
Comparison
Delete
OK
Cancel

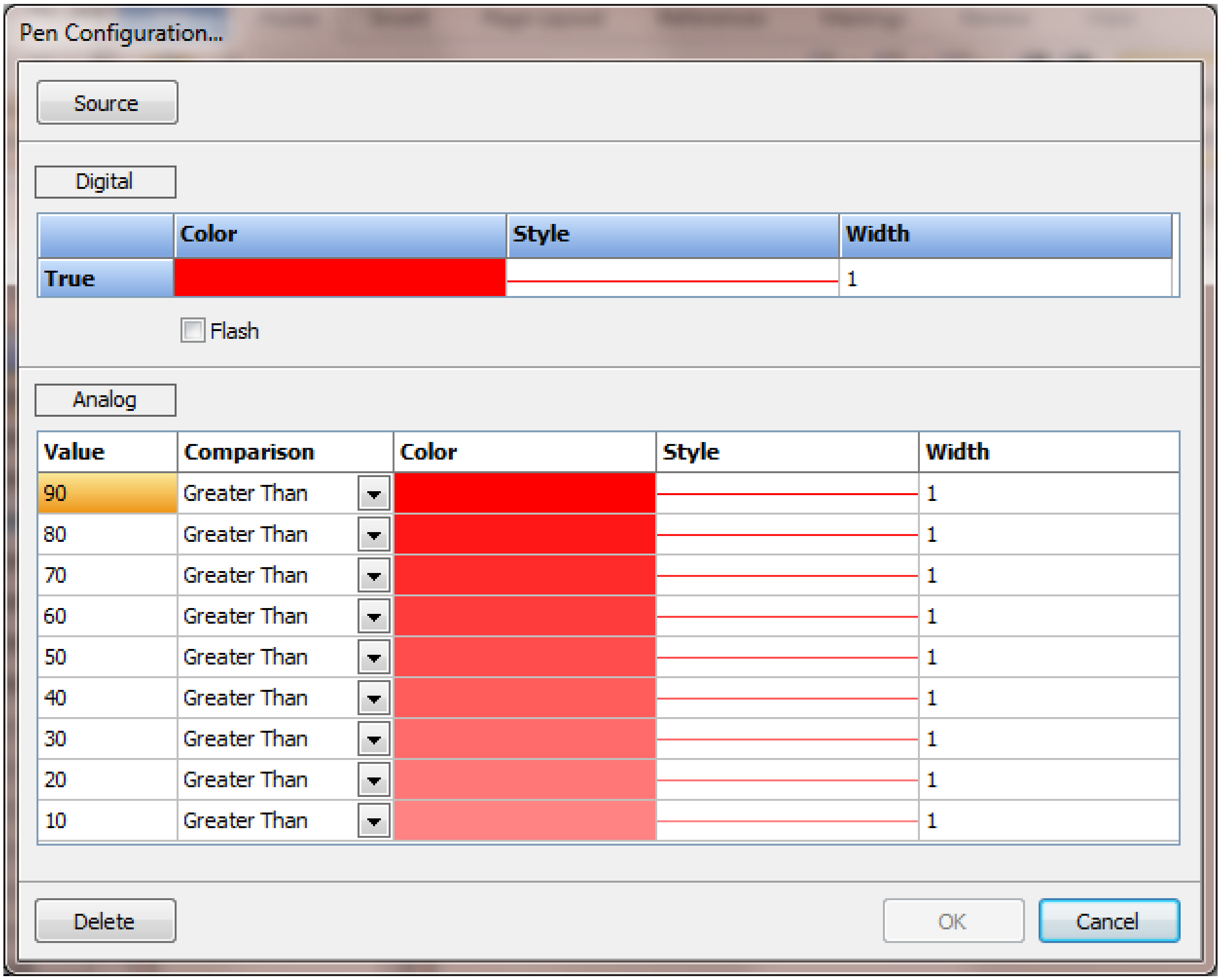
☐ Invert

○ Less Than
○ Equal To
● Greater Than

Value: 50.0

This causes an object to flash visible and invisible.

PEN



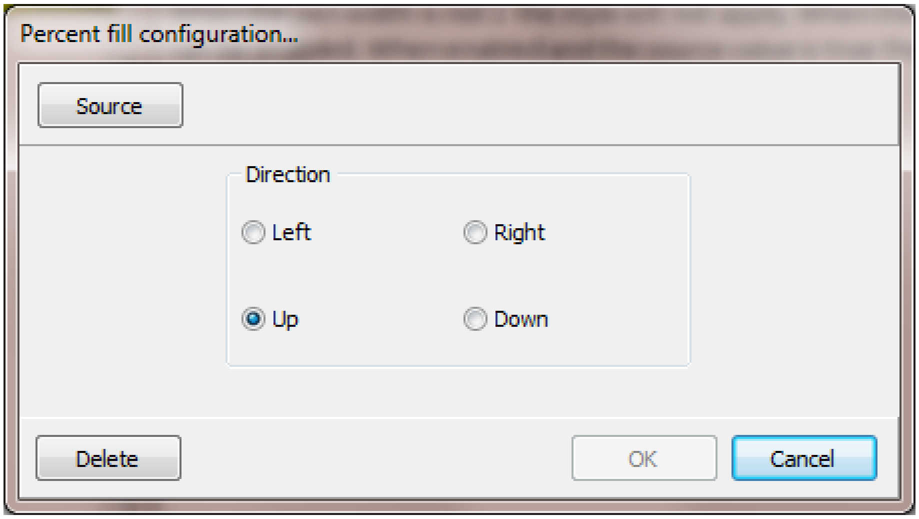
	Color	Style	Width
True	🟥	—	1

☐ Flash

Value	Comparison	Color	Style	Width
90	Greater Than	🟥	—	1
80	Greater Than	🟥	—	1
70	Greater Than	🟥	—	1
60	Greater Than	🟥	—	1
50	Greater Than	🟥	—	1
40	Greater Than	🟥	—	1
30	Greater Than	🟥	—	1
20	Greater Than	🟥	—	1
10	Greater Than	🟥	—	1

This is used to configure the objects pen attributes. The color, style and width are configurable. When the pen width is not 1 the style will not apply. When the source is digital the flash attrubite can be enabled. When enabled and the source value is true the pen will flash between the design time and animation settings.

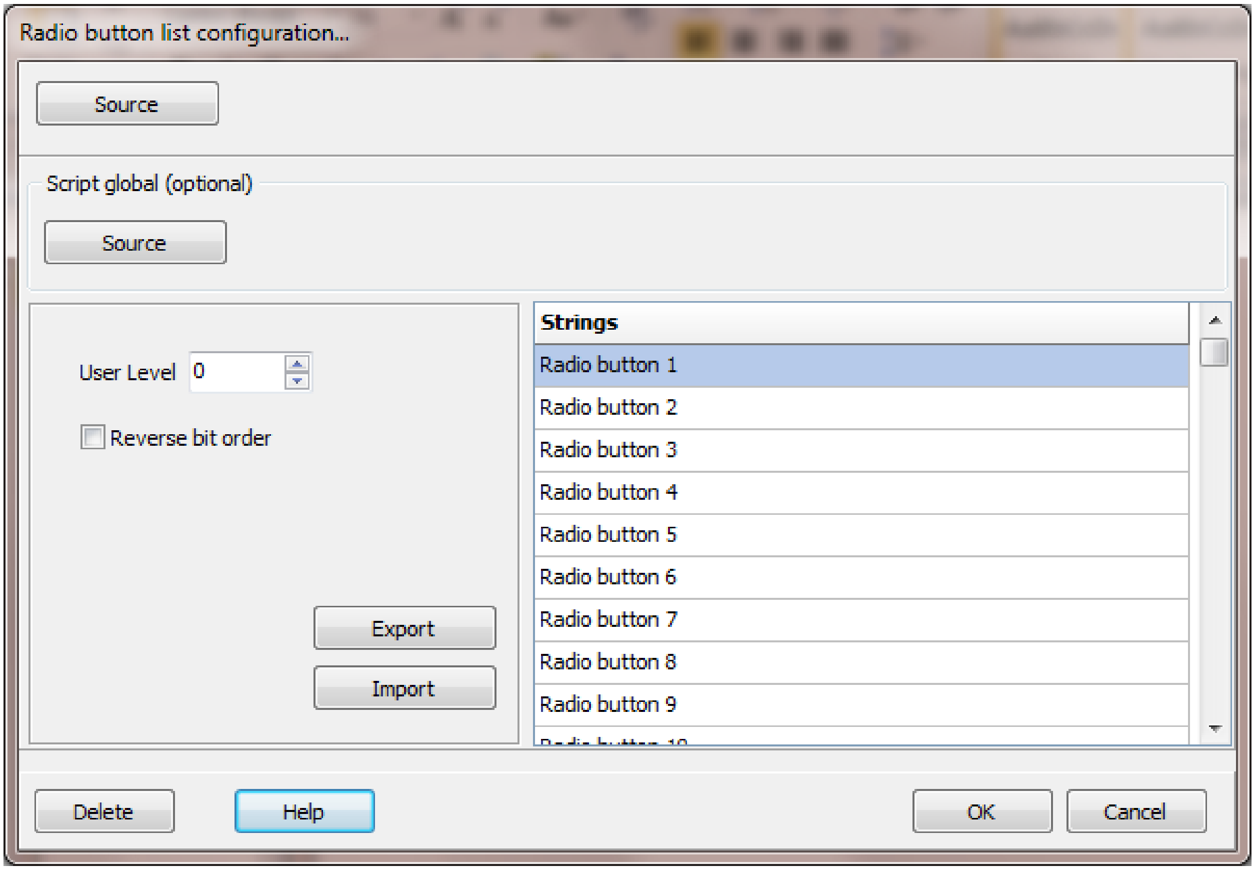
PERCENT FILL


Percent fill configuration...
Source
Direction
Delete
OK
Cancel

Direction
○ Left ○ Right
● Up ○ Down

The object will fill in the direction configured. The "Percent Full Scale" item is used.

RADIO BUTTON LIST


Radio button list configuration...
Source
Script global (optional)
Source
Export
Import
Delete
Help
OK
Cancel

User Level 0

☐ Reverse bit order

Strings
Radio button 1
Radio button 2
Radio button 3
Radio button 4
Radio button 5
Radio button 6
Radio button 7
Radio button 8
Radio button 9

Source

The source must be an analog type tag.

String source (optional)

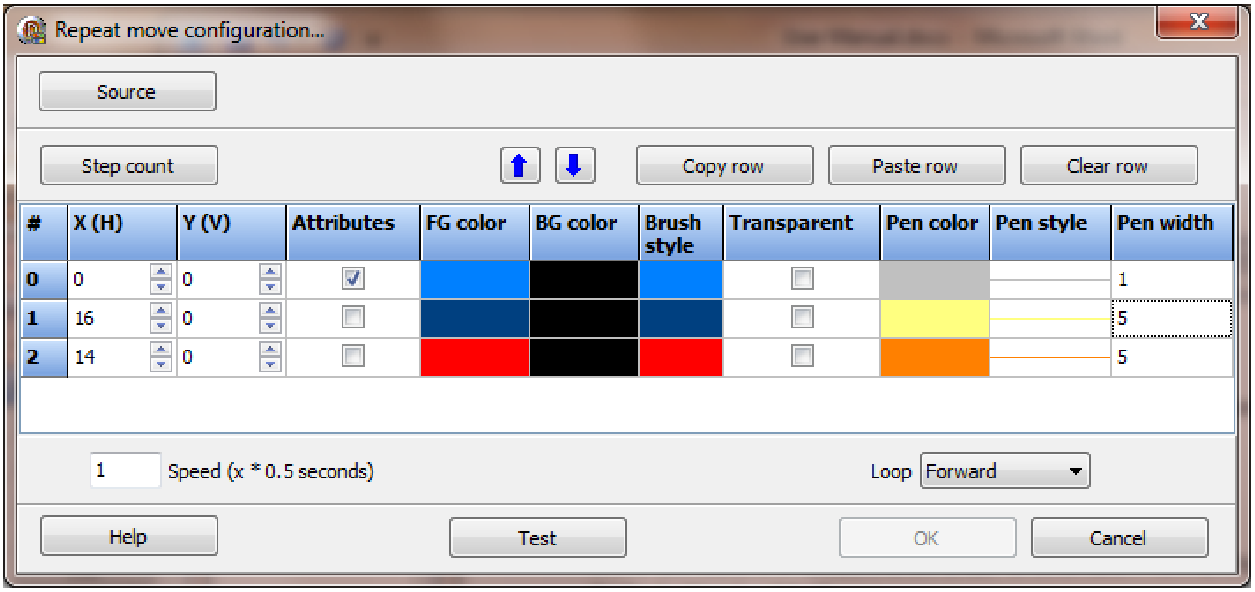
The radio button strings can be configured via the static editor at configuration or at runtime the radio button strings can be loaded from the selected script global section when the window is opened. The section is selected at configuration.
The names in the section must be 1 - 16. <section name>.1, <section name>.2 ... <section name>.16.

When a script global is used:
1. The 'Row count' above is ignored. The number of rows is determined by the highest number name in the section. (16 maximum)
2. A missing name does not delete a radio button. The highest number in the section determines the row count.
3. If the bit order cannot match the radio button order, use an 'Analog Host' point as the source and call a script in the 'On Mouse Up' animation to do any needed processing of the bit order. The 'On Mouse Up' animation is called after the source point is updated.
Warning: If the source point is located in an external device, the data might not have been written to the device before the 'On Mouse Up' animation is called.

Reverse bit order

The normal bit order is left to right, 15, 14, 13, etc.. Radio button 1 is the top.
Radio button 1 = bit 0
Radio button 2 = bit 1
Radio button 3 = bit 2
...
If this attribute is enabled the bit order is reversed. From left to right, 0,1,2,3, etc.
Radio button 1 = bit 15
Radio button 2 = bit 14
Radio button 3 = bit 13

REPEATED MOVE



#	X (H)	Y (V)	Attributes	FG color	BG color	Brush style	Transparent	Pen color	Pen style	Pen width
0	0	0	☑	🟦	⬛	🟦	☐	⬜	—	1
1	16	0	☐	🟦	⬛	🟦	☐	🟨	—	5
2	14	0	☐	🟥	⬛	🟥	☐	🟧	—	5

1 Speed (x * 0.5 seconds)

Loop Forward

The animation is used to move an element on the screen in programmed steps.

Source

The source must be a digital value.

Step count

The number of steps the graphic element moves before it reaches the last step and either reverses or repeats. See loop below.

X (H), Y (V)

The horizontal and vertical amount to move the element from the last position. Positive values move the element to the right and down. Negative values move the element to the left and up.

Attributes

When this checkbox is enabled the color, style, etc. attributes are applied to the element when the step number is equal to the row number. Otherwise, the design time attributes are applied to the graphic element.

Speed

This is the rate the steps progress. The fastest speed is a step every 0.5 seconds. 1 = 0.5, 2 = 1.0, 3 = 1.5, etc.

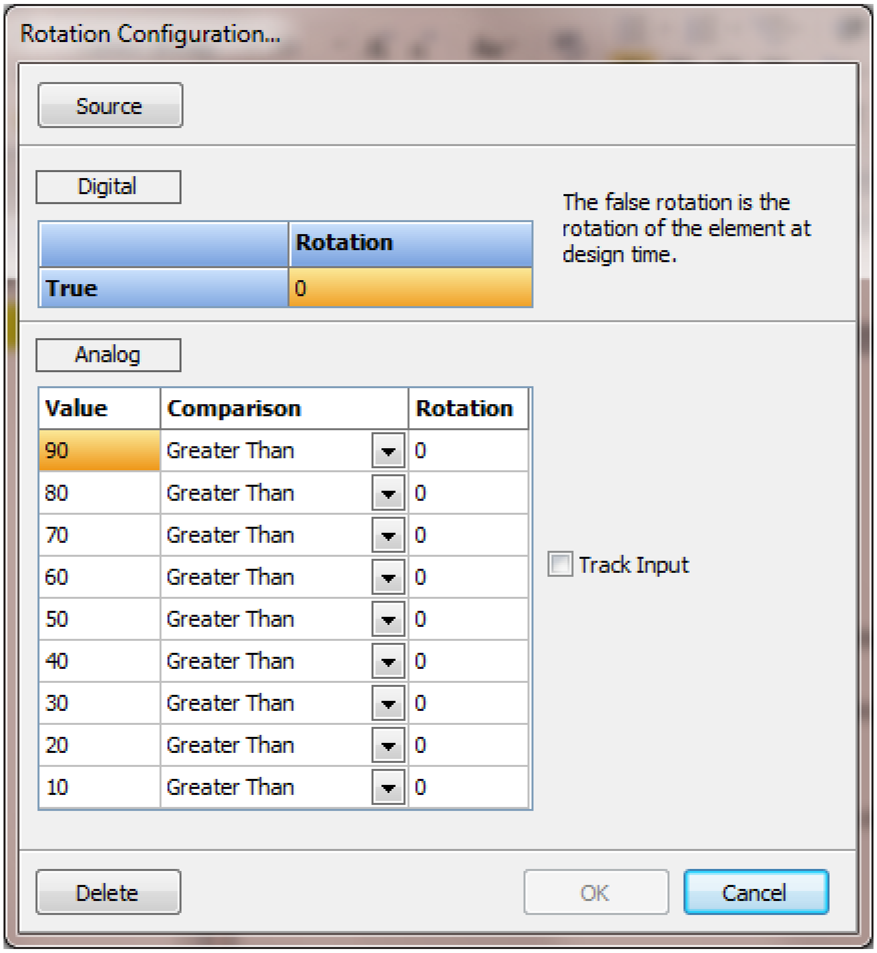
Loop

When the progression reaches the last step this attribute determines the next action.

Forward = the element returns to the design time position and repeats the steps. Looping, repeating.

Reverse = the element moves along the steps in reverse order. Reverses, forward, backward, forward, backward...

ROTATION



	Rotation
True	0

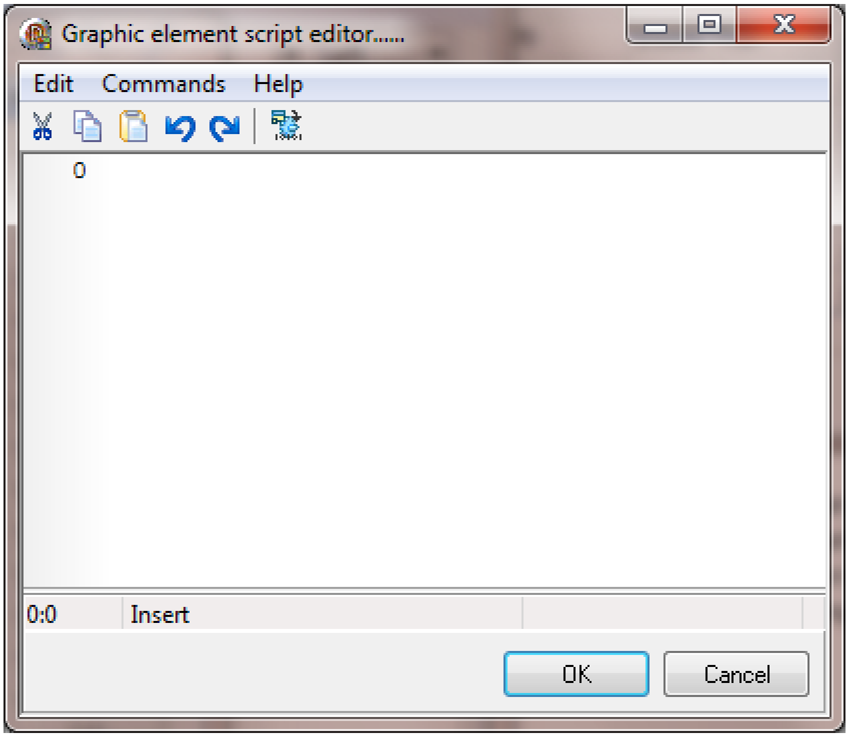
The false rotation is the rotation of the element at design time.

Value	Comparison	Rotation
90	Greater Than	0
80	Greater Than	0
70	Greater Than	0
60	Greater Than	0
50	Greater Than	0
40	Greater Than	0
30	Greater Than	0
20	Greater Than	0
10	Greater Than	0

☐ Track Input

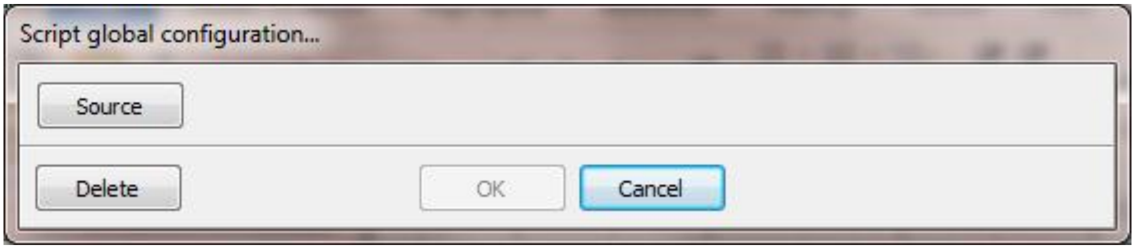
This is used to configure an objects rotation. Text, polygons and bitmaps can be rotated. If you have a rectangle or line you want to rotate, make a polygon of the same dimensions and rotate it. The "Track Input" checkbox on the analog panel is used to rotate an object, clockwise, the amount of the analog value. The comparisons are ignored if the checkbox is enabled.

SCRIPT


Graphic element script editor......
Edit
Commands
Help
0
0:0
Insert
OK
Cancel

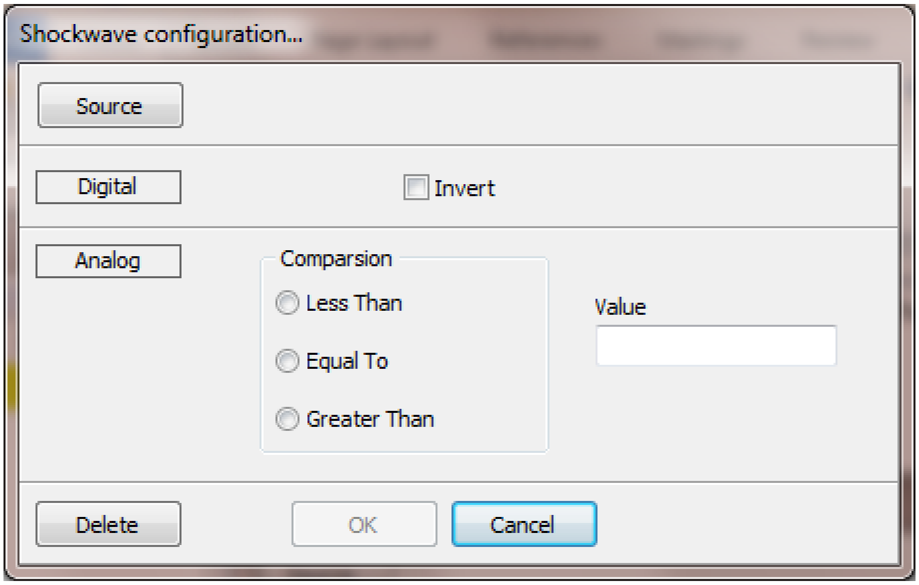
Scripting is covered in the scripting section. Graphic element scripting should only be used if using the animations will not accomplish the design goal. The built-in animations are much faster for the program to execute.

SCRIPT GLOBAL

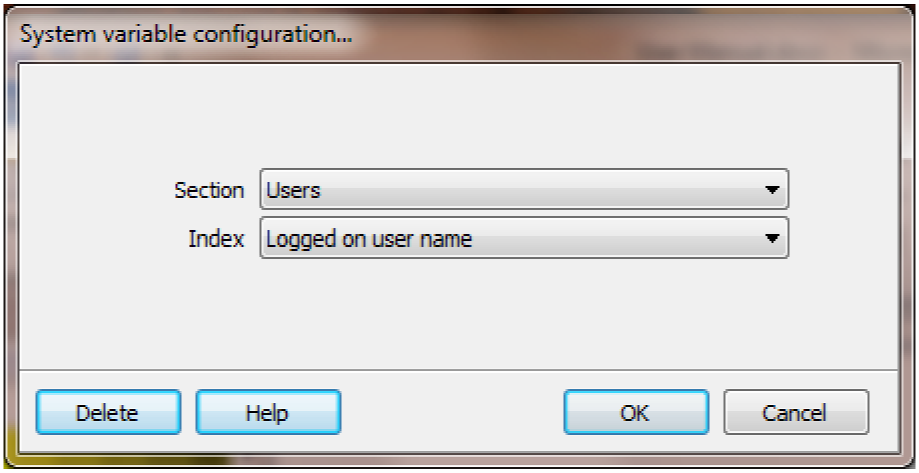

Script global configuration...
Source
Delete
OK
Cancel

This provides a method to display the value of a script global.

SHOCKWAVE FLASH


Shockwave configuration...
Source
Digital
☐ Invert
Analog
Comparsion
○ Less Than
○ Equal To
○ Greater Than
Value
Delete
OK
Cancel

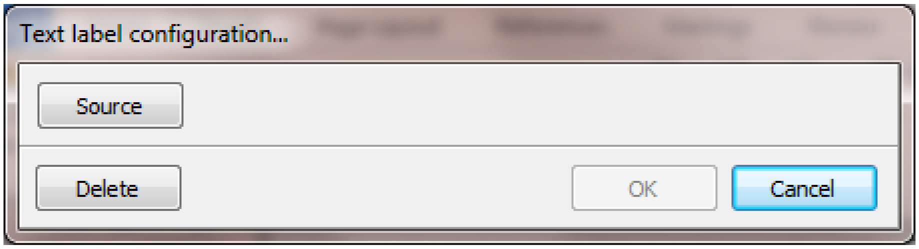
SYSTEM VARIABLE


System variable configuration...
Delete
Help
OK
Cancel

Section: Users
Index: Logged on user name

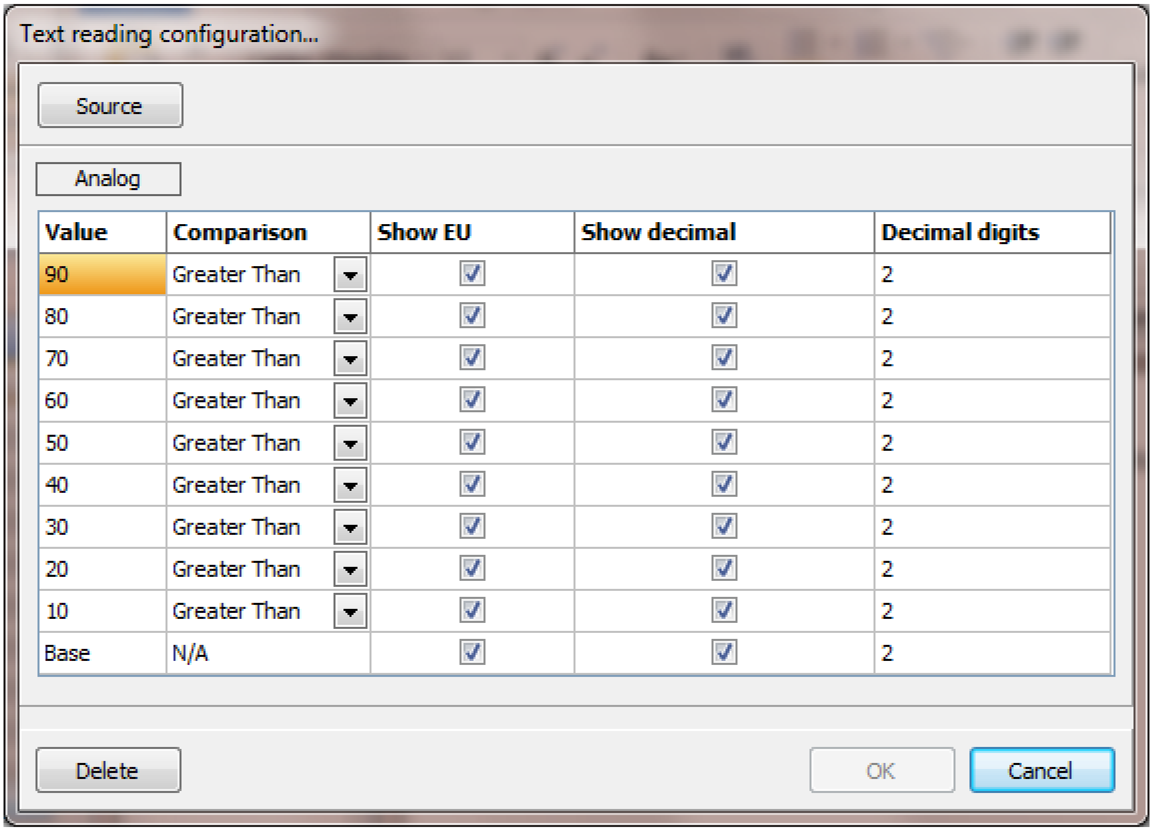
This provides a method to show various internal values.
i.e. alarm counts, event counts, the last 1-15 alarms or events.

Text Label


Text label configuration...
Source
Delete
OK
Cancel

This provides a method to show the text value of a point configuration item or other text source.

Text Reading


Text reading configuration...
Source
Analog

Value	Comparison	Show EU	Show decimal	Decimal digits
90	Greater Than	☑	☑	2
80	Greater Than	☑	☑	2
70	Greater Than	☑	☑	2
60	Greater Than	☑	☑	2
50	Greater Than	☑	☑	2
40	Greater Than	☑	☑	2
30	Greater Than	☑	☑	2
20	Greater Than	☑	☑	2
10	Greater Than	☑	☑	2
Base	N/A	☑	☑	2

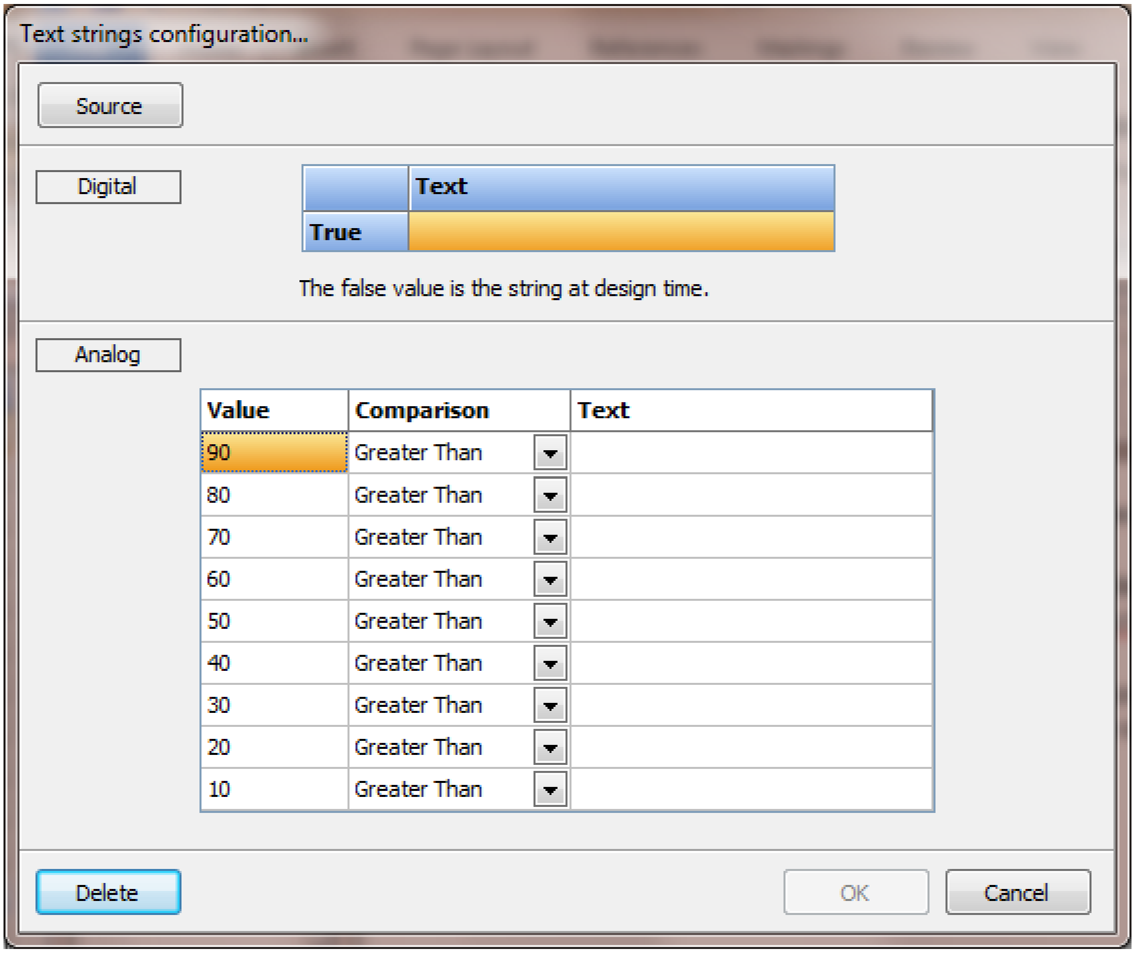
Delete
OK
Cancel

This is used to configure a text object to display the value of the item monitored.

To display large numbers, as whole numbers, select the show decimal point checkbox and set the decimal point count to -1. The floating point value will be trunc'd and displayed.

To display the value, regardless of the value, set the first row comparison to N/A. The logic scans from top to the bottom. If N/A is used for any comparison, the scanning halts and the settings for the row are used.

TEXT STRING


Text strings configuration...
Source
Digital
Analog
Delete
OK
Cancel

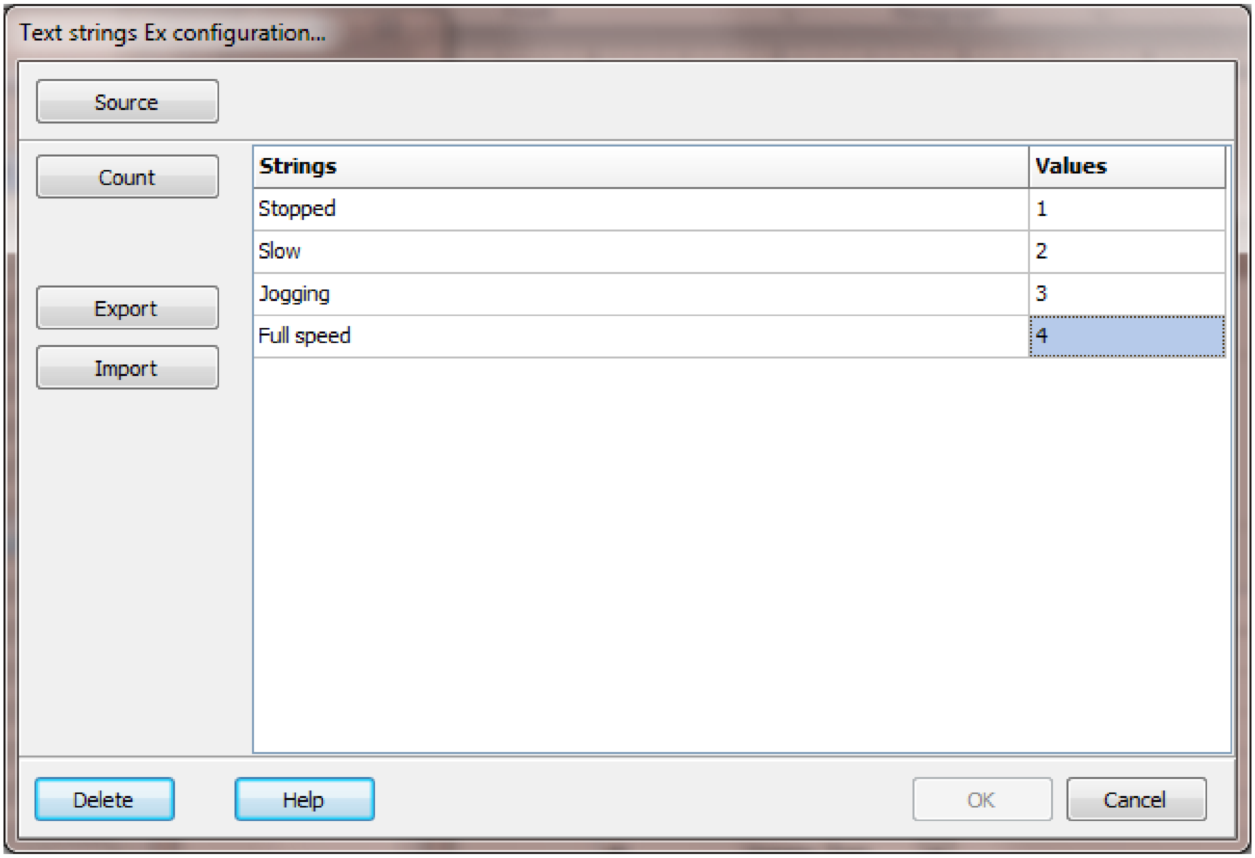
	Text
True	

The false value is the string at design time.

Value	Comparison	Text
90	Greater Than	
80	Greater Than	
70	Greater Than	
60	Greater Than	
50	Greater Than	
40	Greater Than	
30	Greater Than	
20	Greater Than	
10	Greater Than	

This is used to configure a text object to display a static string based on the value of the monitored item.

TEXT STRING EX


Text strings Ex configuration...
Source
Count
Export
Import
Delete
Help
OK
Cancel

Strings	Values
Stopped	1
Slow	2
Jogging	3
Full speed	4

This is used to configure a text object to display a static string based on the value of the monitored item. Also see: Text String. At runtime if a match for the monitored item and a value in the list is not found the text will not be altered.

Count

This is the number of strings/values in the list. (1 - 32767)

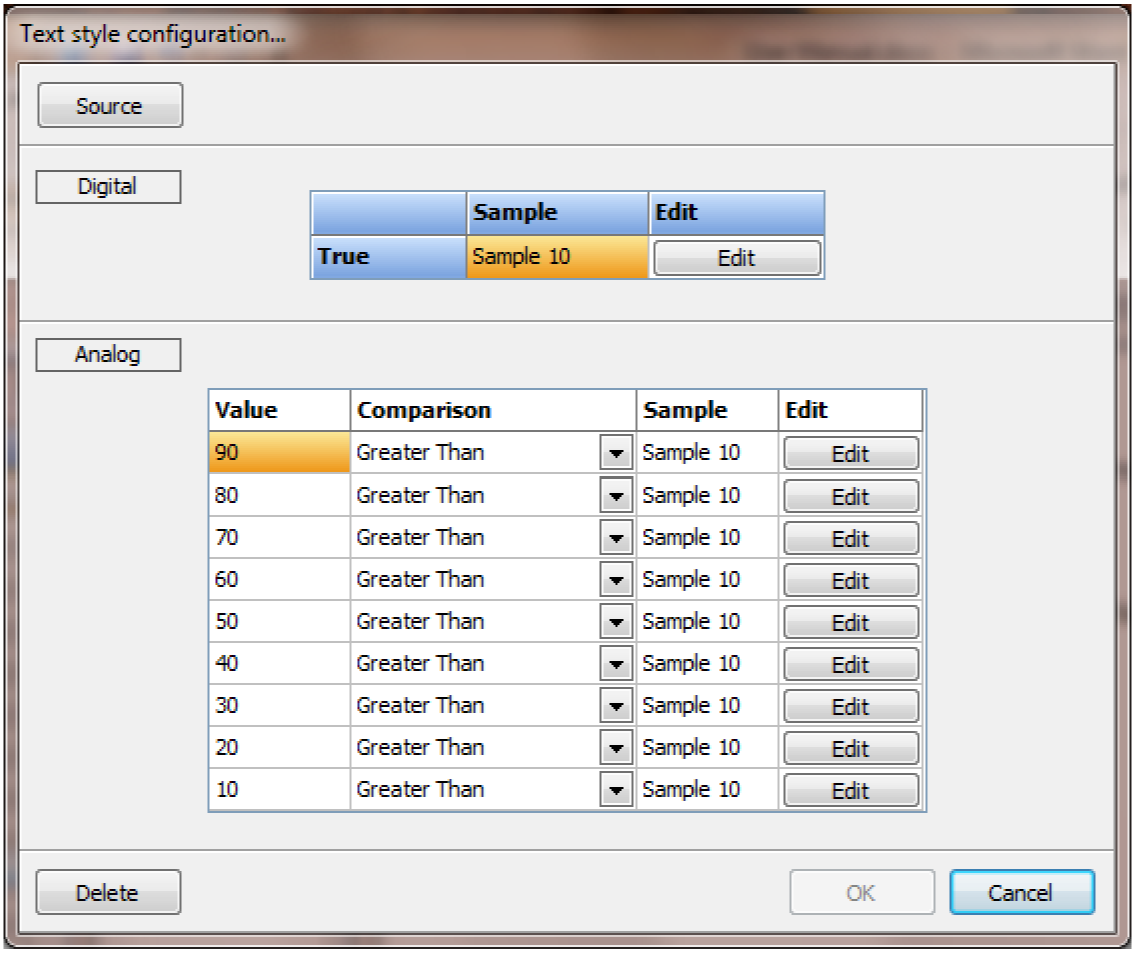
Export

This exports the string grid as a two column comma separated file.

Import

This will import a two column comma separated file to the string grid.

TEXT STYLE

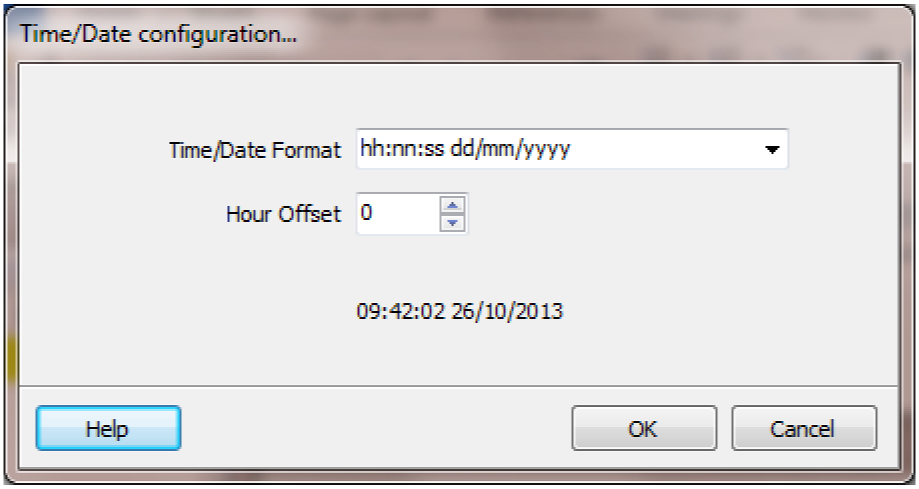

Text style configuration...
Source
Digital
Analog
Delete
OK
Cancel

	Sample	Edit
True	Sample 10	Edit

Value	Comparison	Sample	Edit
90	Greater Than	Sample 10	Edit
80	Greater Than	Sample 10	Edit
70	Greater Than	Sample 10	Edit
60	Greater Than	Sample 10	Edit
50	Greater Than	Sample 10	Edit
40	Greater Than	Sample 10	Edit
30	Greater Than	Sample 10	Edit
20	Greater Than	Sample 10	Edit
10	Greater Than	Sample 10	Edit

This is used to configure a text object attributes. Text style, font, size and other attributes can be configured. The text color is configured via the brush animation. The color combo box on the text edit dialog is ignored.

TIME/DATE



Time/Date Format: hh:nn:ss dd/mm/yyyy

Hour Offset: 0

09:42:02 26/10/2013

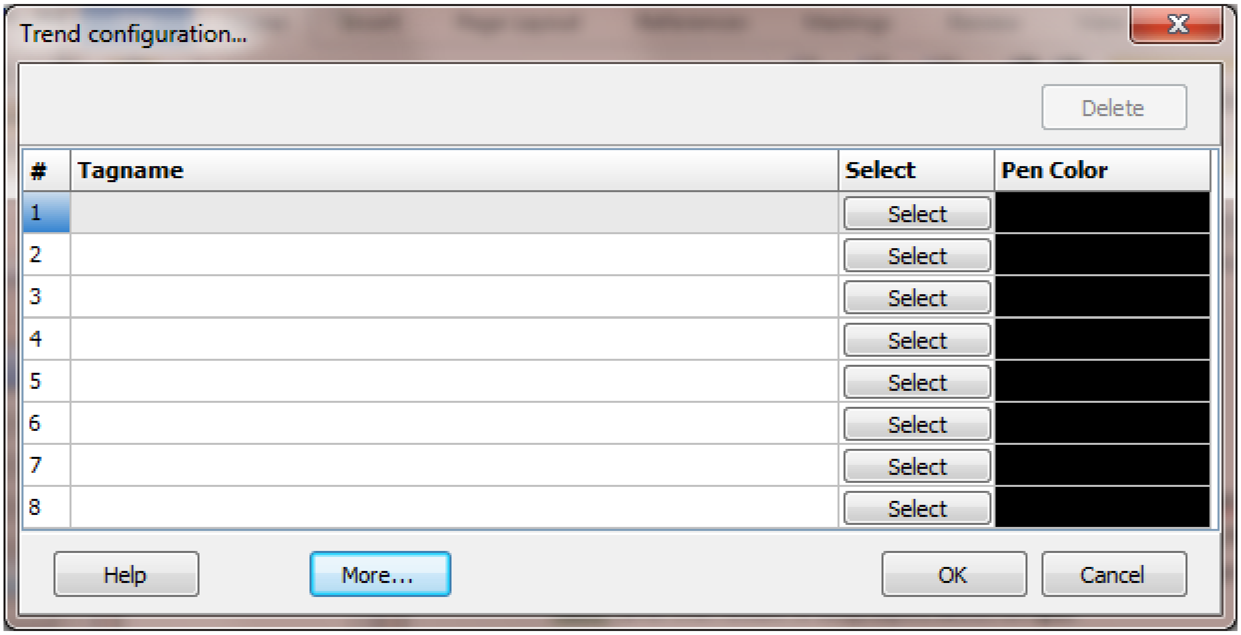
Mask

d	Displays the day as a number without a leading zero (1-31).
dd	Displays the day as a number with a leading zero (01-31).
ddd	Displays the day as an abbreviation (Sun-Sat).
dddd	Displays the day as a full name (Sunday-Saturday).
g	Displays the period/era as an abbreviation (Japanese and Taiwanese locales only).
gg	Displays the period/era as a full name.
e	Displays the year in the current period/era as a number without a leading zero (Japanese, Korean and Taiwanese locales only).
ee	Displays the year in the current period/era as a number with
a	leading zero (Japanese, Korean and Taiwanese locales only).
m	Displays the month as a number without a leading zero (1-12). If the m specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.
mm	Displays the month as a number with a leading zero (01-12). If the mm specifier immediately follows an h or hh specifier, the minute rather than the month is displayed.
yy	Displays the year as a two-digit number (00-99).
yyyy	Displays the year as a four-digit number (0000-9999).
h	Displays the hour without a leading zero (0-23).
hh	Displays the hour with a leading zero (00-23).
n	Displays the minute without a leading zero (0-59).
nn	Displays the minute with a leading zero (00-59).
s	Displays the second without a leading zero (0-59).
ss	Displays the second with a leading zero (00-59).
z	Displays the millisecond without a leading zero (0-999).
zzz	Displays the millisecond with a leading zero (000-999).
am/pm	Uses the 12-hour clock for the preceding h or hh specifier, and displays 'am' for any hour before noon, and 'pm' for any hour after noon. The am/pm specifier can use lower, upper, or mixed case, and the result is displayed accordingly.

a/p	Uses the 12-hour clock for the preceding h or hh specifier, and displays 'a' for any hour before noon, and 'p' for any hour after noon. The a/p specifier can use lower, upper, or mixed case, and the result is displayed accordingly.
'xx'	Characters enclosed in single or double quotes are displayed as-is, "xx" and do not affect formatting.

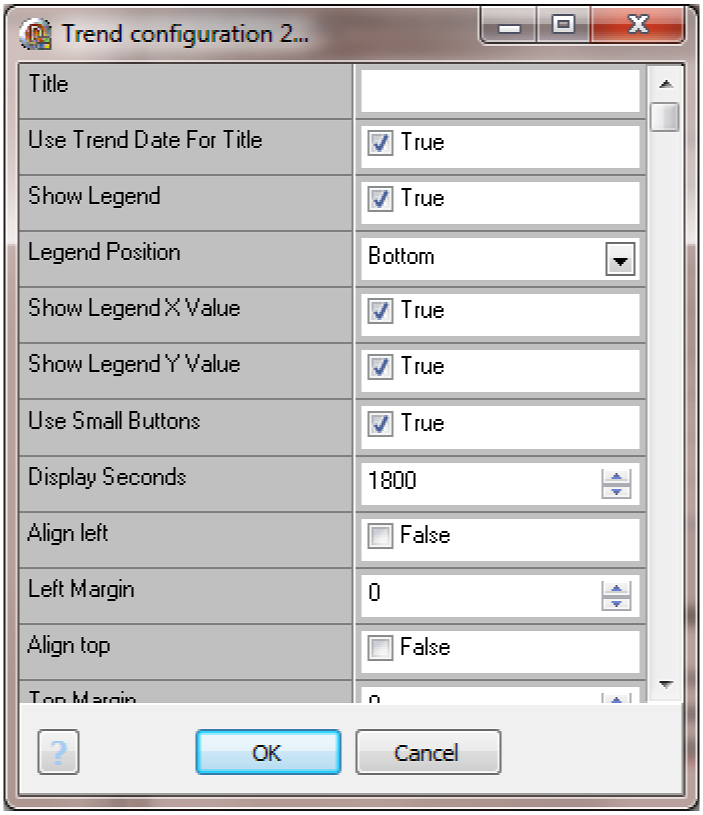
Format specifiers may be written in upper case as well as in lower case letters--both produce the same result.

TREND


Trend configuration...
Delete
Help
More...
OK
Cancel

#	Tagname	Select	Pen Color
1		Select	■
2		Select	■
3		Select	■
4		Select	■
5		Select	■
6		Select	■
7		Select	■
8		Select	■

Each trend can display a maximum of eight trends.
Select the tagname to trend and select the pen color.
To view past days trends, use the ViewTrendHistory mouse command.


Trend configuration 2...
?
OK
Cancel

Title	
Use Trend Date For Title	☑ True
Show Legend	☑ True
Legend Position	Bottom
Show Legend X Value	☑ True
Show Legend Y Value	☑ True
Use Small Buttons	☑ True
Display Seconds	1800
Align left	☐ False
Left Margin	0
Align top	☐ False
Top Margin	0

Title

This is a string displayed at the top of the trend. It can be blank.

Use Trend Date for Title

If enabled the title above the trend will be the date of the trend currently displayed. If enabled the title attribute is ignored.

Show Legend

The legend displays the pen tagname and if enabled the X and Y values. If enabled, the legend will be displayed according to the settings.

Legend Position

The legend can be displayed on the bottom, left, right or top area of the trend element.

Show Legend X Value

If the legend is enabled and this attribute is enabled the last "X" axis trend value for the pen will be displayed after the tagname in the legend.

Show Legend Y Value

If the legend is enabled and this attribute is enabled the last "Y" axis trend value for the pen will be displayed after the tagname in the legend.

Use Small Buttons

The buttons for runtime trend viewing adjustment will be displayed in with small buttons.

Display Seconds

The trend can be zoomed to many levels. This attribute is the span of the "X" axis when the trend is initially displayed. The default value is 1800 seconds (30 minutes). The limits are 60 to 86,400 seconds (1 minute to 1 day)

Align Left, Top, Right, Bottom

The trend element can be anchored (locked) to the any or all four sides of the window.

Left, Top, Right, Bottom Margin

If the align attribute is set this defines the amount of space (in pixels) to offset the selected edge of the trend.

Example:
The "align left" attribute is enabled.
The "left margin" is 100.
When the trend is displayed in the window the left edge of the trend will be 100 pixels from the left edge of the window.

Y Axes Decimal Points

The number of digits shown after the decimal point. (0-16)

Filename

If this field is not empty, it is the file name (without extension) to store and load the trend settings. These are the settings that are configured when the trend is displayed at runtime. The file is saved/loaded from the project directory.
Prior to version 5.0.0.1
The file is saved/loaded from the "Miscellaneous" path configured in the project settings.

Trend name (Optional)

The name is used when a command to change a pen, add/remove limit or band, at runtime is executed. Trend names can be duplicated. If a change command is used, the first trend with a name matching the name in the command will be used for the command.

Font color

The font color for all fonts in the trend.

Font color (printing), Background color (printing)

This is the color for the fonts/background when printing via the print button in the trend.

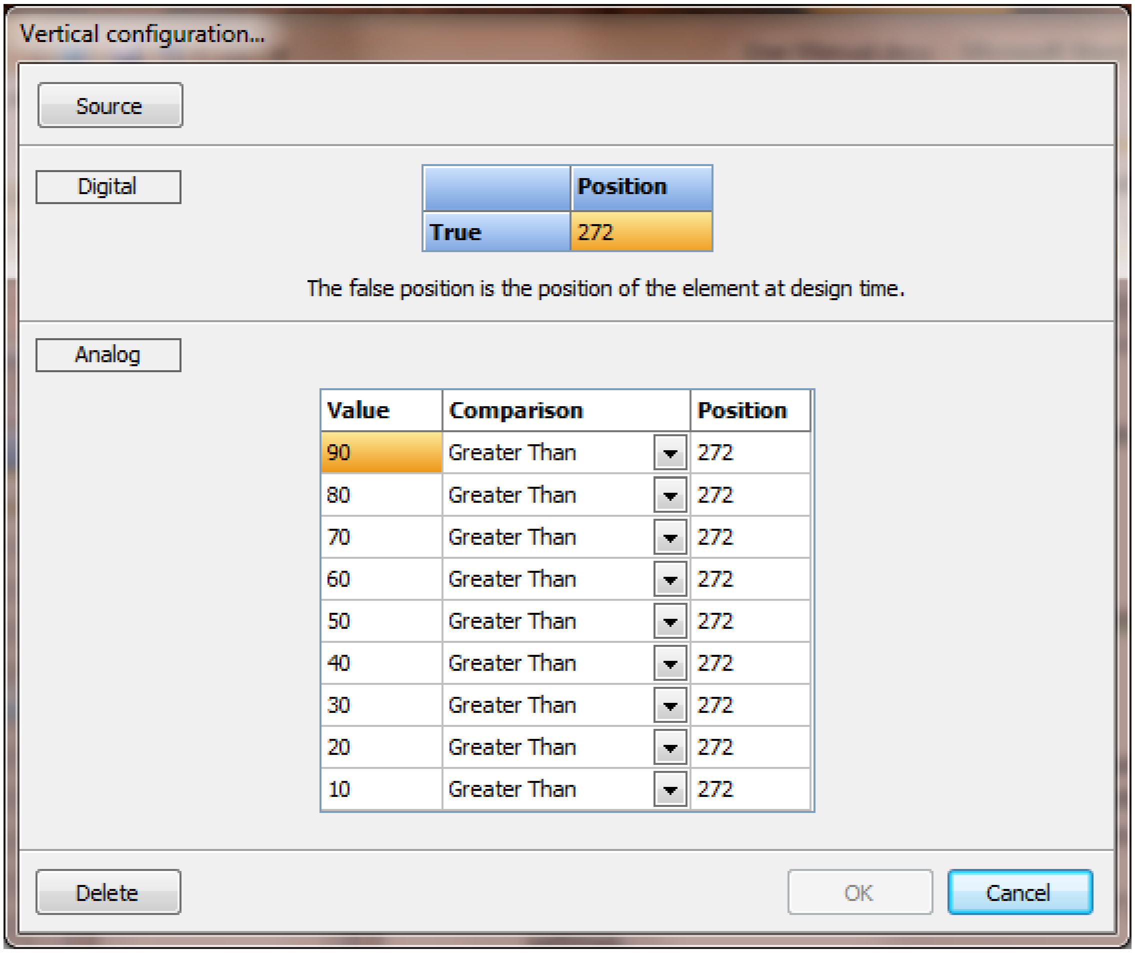
Use print colors

If enabled, when the print command is issued via the print button in the trend, the trend will print with the colors selected. Frequently, the trend on the monitor uses a dark background and a lighter color for fonts. For printing, this option provides for the colors to reverse creating better print output.

Print orientation

If enabled, when the print command is issued via the print button in the trend, the trend will print with the orientation selected.

VERTICAL POSITION


Vertical configuration...
Source
Digital
Analog
Delete
OK
Cancel

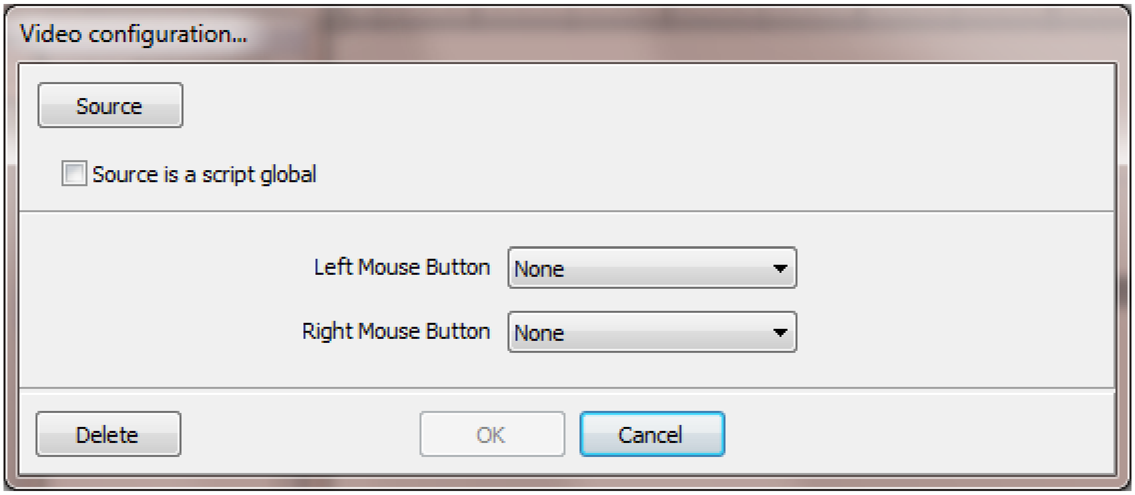
	Position
True	272

The false position is the position of the element at design time.

Value	Comparison	Position
90	Greater Than	272
80	Greater Than	272
70	Greater Than	272
60	Greater Than	272
50	Greater Than	272
40	Greater Than	272
30	Greater Than	272
20	Greater Than	272
10	Greater Than	272

This is used to configure the vertical position of an object.

VIDEO


Video configuration...
Source
☐ Source is a script global
Left Mouse Button
None
Right Mouse Button
None
Delete
OK
Cancel

Provides a method to display images from a video camera or encoder.

Source

The source video to supply the video images.

Source is a script global
The name of the source video is the value of the selected script global if this attribute is enabled. This provides a method to change the source video used before the window is opened. For example: a project has two pumps with the same I/O configuration and both have one video. Using tag pointers to access the I/O for graphic elements and script globals as a pointer to the video name, one window can be created and maintained. Setting the tag index and the script global configures the window to show the selected data at runtime.

Left Mouse Button, Right Mouse Button

None

When the mouse button is pressed in the element no action will be taken.

Capture

A frame from the video will be captured and saved to disk.

Record

When selected the state of recording the video will be toggled. Start to stop or stop to start.

Note: If recording and the video device is a VFW connection recording will be terminated when the window is closed. If the video device is an IP camera/video encoder the recording will not terminate unless there are no other open windows displaying the video and motion detection is not recording.

Note: VFW cameras can only be viewed in one window at a time. IP cameras/video encoders do not have this limitation.

Note: For mouse down/up commands place a button over the video element or that part of the element you want the user to click on. Set the button to transparent and use the button mouse commands.

RUNTIME WARNING

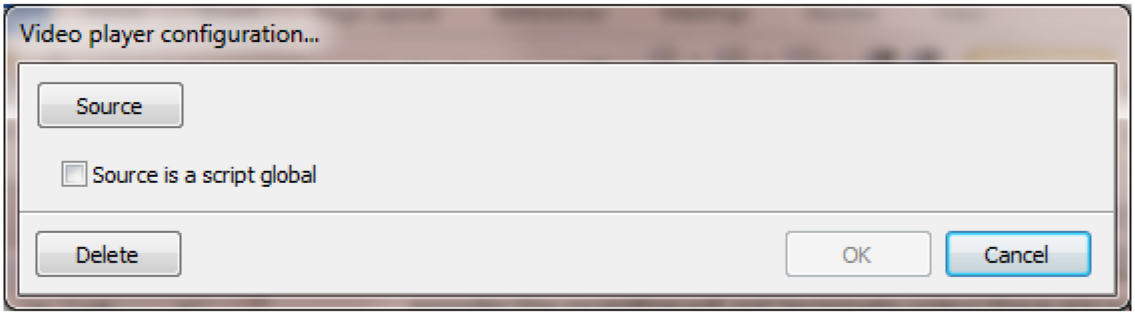
#1 If an attempt to view a camera output (VFW) in more than one element at a time during runtime, errors will be generated and will result in an access violation. A video element referencing a camera (VFW) can be configured more than once in separate windows. Make sure both windows cannot be opened and viewed at the same time. IP cameras/video encoders do not have this limitation.

#2 If the video input device is not connected and functioning properly, the program may respond very slowly if the window containing the video animation is displayed. If this occurs, select the window and

press and hold the ALT + F4 keys until the window closes
or
press and hold the left mouse button in the window close box until the window closes
or
press and hold the left mouse button on the window graphic used to close the window until the cursor changes to a "hand" and then release the mouse button.

RUNTIME WARNING

VIDEO PLAYER


Video player configuration...
Source
☐ Source is a script global
Delete
OK
Cancel

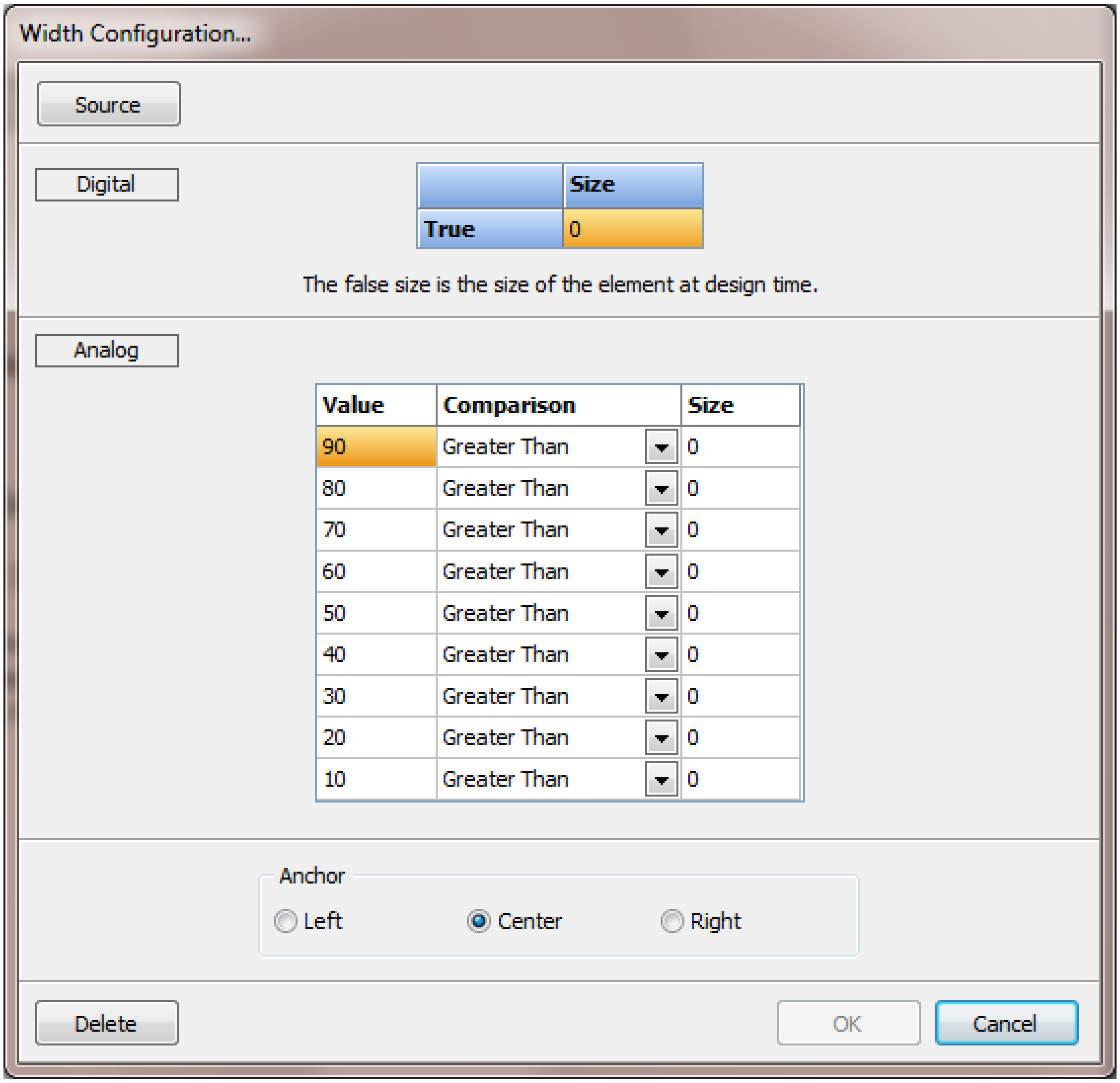
Source

The name/path of the file to playback in the player.

Source is script global

The file name/path is the value of the selected script global if this attribute is enabled. This provides a method to change the file name used before the window is opened or before the 'Play' button is selected.

WIDTH


Width Configuration...
Source
Digital
Analog
Delete
OK
Cancel

	Size
True	0

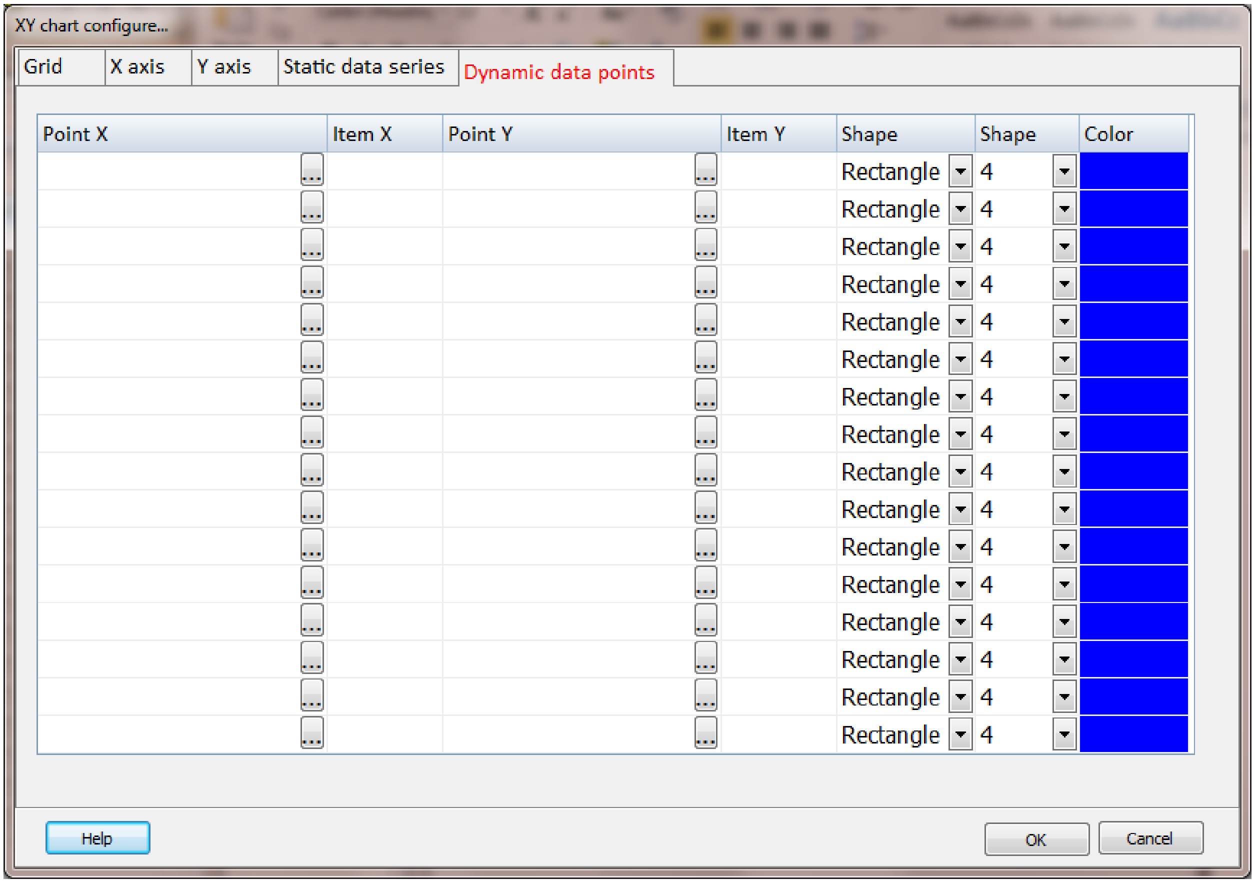
The false size is the size of the element at design time.

Value	Comparison	Size
90	Greater Than	0
80	Greater Than	0
70	Greater Than	0
60	Greater Than	0
50	Greater Than	0
40	Greater Than	0
30	Greater Than	0
20	Greater Than	0
10	Greater Than	0

Anchor
○ Left ● Center ○ Right

This is used to configure the width of an object.

XY CHART



Point X	Item X	Point Y	Item Y	Shape	Shape	Color
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦
				Rectangle	4	🟦

This is an XY chart that can contain many dynamic data points and many static data series.

Dynamic data point: a point on the chart that consist of an X value and Y value that are plotted on the chart as one point.

Static data series: a series of X, Y points on the chart used to show a series of points.

For example, one series could show a high range and another for the low range. Then a series of dynamic data points could be plotted to show current values.

For example, one series could show a series of values representing a characterized curve and then a dynamic data point is used to indicate the location on the curve for an output.

Note: The X and/or Y divisions need not be linear. The X and Y divisions are drawn in an even distribution. You may need to adjust the margins or the size of the grid element to get the first and last positions to line up with the edge of the grid. If an edge lining up is desired make sure the inside rectangle, the grid adjusted with the margins) is evenly divisible by the axis tick count - 1.
Example: inside rectangle height = 336, (tick count - 1) = 14, 336 / 14 = 24 good.
Example: inside rectangle height = 341, (tick count - 1) = 14, 341 / 14 = 24.357 bad.

Grid

Margins, Top, Bottom, Left, Right

This provides a space around the edge of the chart. Used to provide space for the X and Y tick marks and values if enabled. See below.

Border, pen width, color

If the pen width is greater than 0 (> 0) a border is drawn around the chart using the pen width and color selected.

Background color

This is the color of the complete chart area. If the margins are zero this color will not be visible. The background color, inside the chart, is the brush color.

X axis, Y axis

File

This is the file that contains the tick points for the axis. The file path is the project path and in the directory 'XYChart'. The file is a comma separated text file (.txt) with each line representing one tick point. Each line has three values.
Tick value: a number, used in data calculations.
Displayed value: a string, displayed at the tick mark. If the 'Tick values' is not enabled this string is ignored.
Tick size: 'S' for short or 'L' for long. The 'S' length is 1/2 the tick length (see below).
The first line is the bottom/left of the chart and the last line is the top/right of the chart.
(value, displayed value, tick size)

Example:
0.0, Empty, L
5.0, 1/8, S
10, 1/4, L
...
40.0,Full, L

It is not required for the data points to be evenly distributed. The spacing of the ticks will be evenly distributed on the chart. The values can be any value as long as each lines value increases from the line before.

Example: 0, 2, 4, 6, 8 or 1, 45, 46, 47, 80. Bad, 1, 2, 5, 3, 7
A minimum of two lines per file is required.

Tick values

If enabled the values will be displayed.

Tick length

The length of the long tick mark. Setting this value to 0 will not display tick marks.

Font

The font for the tick values.

Grid lines

If enabled, a line will be drawn across the gird at each tick mark.

Grid/tick color

The color of the tick mark and the grid lines.

Tick value align (Y axis only)

If the tick value is enabled (see above) this selects the alignment of the text.

Static data series

File

This is the file that contains the data points for the series. The file path is the project path and in the directory “XYChart”. The file is a comma separated text file (.txt) with each line representing one series point. Each line has two values. (X, Y)
X value: the X value or horizontal value.
Y value: the Y value or vertical value.

Example:
0.0, 55.5
7, 22
10, 19

A minimum of one line is required.

Shape

Each data point displayed on the chart can have a shape. Rectangle, circle, diamond or none.

Shape size

The size of the shape.

Pen width

The pen width of the line that connects the data points. Setting the value to 0 will prevent the line from being drawn.

Note: If the pen width is zero (0) and the shape is none, the data series will not be drawn.

Color

The color of the data points and connecting line if enabled.

Dynamic data point

Data point

Each point consist of two values. An X value and a Y value. Each value can use as a source a:
1) point.item pair
2) constant value

To use a constant value place an equal sign (=) and the value in the point and item field, the two fields must match. Example =10 in both fields.

Shape

Each dynamic data point displayed on the chart can have a shape. Rectangle, circle, diamond or none.
Note: If the shape is none, the point will not be displayed.

Shape size

The size of the shape.

Color

The color of the dynamic data point.

MOUSE COMMANDS

Mouse commands are commands that are mainly used in the user created graphics screens. The commands are also used by the task scheduler, the scheduler and any other function of the program that allows configuration of actions similar in nature.

Most mouse commands “wrap” scripting commands. When a mouse command wraps or has the same attributes as a script command and has the same function, the mouse command will be described in the scripting section.

All the mouse commands are listed below in alphabetical order.

ACKNOWLEDGE COMMAND	Same as script AcknowlegeCommand.
BEEP	Same as script Beep.
CLEAR PORT COUNTERS	Same as script ClearPortCounters.
CLOSE ACTIVE ALARM WINDOW	Same as script CloseAlarmWindow.
CLOSE ALARM LOG WINDOW	Same as script CloseAlarmLogWindow.
CLOSE ALL USER WINDOWS	Same as script CloseAllUserWindows.
CLOSE EVENT LOG WINDOW	Same as script CloseEventWindow.
CLOSE PORT DIAGNOSTIC WINDOW	Same as script ClosePortDiagnosticWindow.
CLOSE TAG MONITOR WINDOW	Same as script CloseTagMonitorWindow.
CLOSE WINDOW	Same as script CloseWindow.
CLOSE WINDOW 2	This closes the window that the graphic element is located on. If the 'Browser to front' is 'true' and a browser window is open, it will become the front window and then the window will close.
EXECUTE REPORT	Same as script ExecuteReport.

FORCE LOGON	Same as script ForceLogon. Note: When a user is not "logged on" all commands are disabled.
FTP SET SETTING	Same as script FTPSetSetting.
GLOBAL SET	Same as script GlobalSet.
LAUNCH APPLICATION	Same as script LaunchApplication.
LOAD RECIPE	Same as script LoadRecipe.
LOG EVENT	Same as script LogEvent.
LOG OFF	Same as script LogOff.
LOG ON	Same as script LogOn. Note: When a user is not "logged on" all commands are disabled. This single command, in a mouse down or mouse up animation is permitted. If more than one command is configured for the mouse down/up animation no commands are executed.
ODBC DATA LOGGER	Same as script ODBCDatalogger.
ODBC DATA LOGGER PAUSE	Same as script ODBCDataloggerPause.
ODBC DATA LOGGER SET REFRESH	Same as script ODBCDataloggerSetRefresh.
OMNI RETRIEVE REPORT	Same as script OmmiRetrieveReport.
OMNI VIEW REPORT	Same as script OmmiViewReport.
OPEN ACTIVE ALARM WINDOW	Same as script OpenAlarmWindow.
OPEN ALARM LOG WINDOW	Same as script OpenAlarmLogWindow.
OPEN BROWSER WINDOW	Same as script OpenBrowserWindow.
OPEN DRIVE STATUS WINDOW	Same as script OpenDriveStatusWindow.

OPEN EVENT LOG WINDOW	Same as script OpenEventWindow.
OPEN PORT DIAGNOSTIC WINDOW	Same as script OpenPortDiagnosticWindow.
OPEN TAG MONITOR WINDOW	Same as script OpenTagMonitorWindow.
OPEN USER LOG ADDITION WINDOW	Opens the user log window for log entry addition. If 'Allow category change' is enabled the user can select the category for the new log entry. If categories are not defined, this attribute has no effect. The category field is optional.
OPEN USER LOG VIEWER WINDOW	Opens the user log viewing window.
OPEN WINDOW	Same as script OpenWindow with added “close window“ attribute. If the “Close window” attribute is true the calling window will be closed. If a window does not open, the calling window will not be closed.
OPEN WINDOW EX	
OPEN WINDOW ONCE	The selected user window is opened. If the "Bring to front if already open" attribute is true and the window is open, it will be moved in the Z order to the front and a second window will not be open. If the attribute is not set, the names of other windows are not examined. If the 'Close window' attribute is true the calling window will be closed. If a window does not open, the calling window will not be closed.
OPEN WINDOW USER SELECT WINDOW	Same as script OpenWindowUserSelect with added “close window“ attribute. If the “Close window” attribute is true the calling window will be closed. If a window does not open, the calling window will not be closed.
PLAY SOUND	Same as script PlaySound.
PRINT SCREEN	Same as script PrintScreen.

PRINT SCREEN ACTIVE WINDOW	Same as script PrintScreenActiveWindow.
PULSE BOOLEAN	Same as script WriteValuePulse.
QUEUE SCRIPT	Same as script ExecuteScript.
RELOAD RECIPE SHEET	Same as script ReloadRecipeSheet.
RESET BOOLEAN	Same as script WriteValue with a value of zero (0).
SAVE CAMERA LOOP	Same as script CameraSaveLoop.
SEND KEYS	Same as script SendKeys.
SET BOOLEAN	Same as script WriteValue with a value of one (1).
SET MA STATION CONFIGURATION NAME	Same as script SetMAStationConfigurationName.
SET PORT READ ENABLE	Same as script SetPortReadEnable.
SET TASK STATE	Same as script SetTaskState.
SET TIMER FIELD	Same as script TimerSet.
SET TREND PEN	Same as script SetTrendPen.
SET WINDOW COLOR	Same as script SetWindowColor.
SET WINDOW DATE	The user is queried for a date via the GetUserInputDate script command. If the accept button is selected the SetWindowDate script command is executed.
SILENCE ACKNOWLEDGE COMMAND	Same as script SilenceAcknowledgeCommand.
SILENCE COMMAND	Same as script SilenceCommand.
START CAMERA RECORDING	Same as script StartCameraRecording.
STOP CAMERA RECORDING	Same as script StopCameraRecording.

STRING SET

Same as script StringSet.

STRING SET EX

This is similar to StringSet except the value of the string is collected from a script global.

TOGGLE BOOLEAN

This is a “WriteValue” with the value inverted from the tagname/item value. The point must be read/write.

VIEW TREND HISTORY

This command is used to display a trend calendar selection window. The window has two parts. The calendar selection and the trend viewing.

First pen (optional)

If the mouse command is on a window with more than one trend element this identifies the trend to be used. If blank, the first trend element in the graphic element list is used. If the window only has one trend element this field can be blank.

Window left/top/width/height

The size and position of the display window. If width or height is 0 the default/last value is used.

Keep window on top

If enabled the window will be set to be the top window. More than one window open with this attribute set will cause unpredictable window behavior.

Open maximized

The window will be opened filling the screen. The window position/size above as well as the last open position/size are ignored if this attribute is enabled.

Days back

This is used to limit the number of days, from the current date, that are accessible. 0 = infinite

Border style

Windows provides for several window border styles. None, single, sizeable and dialog.

Global script section/item (Optional)

The script global selected must contain a date with the format of MM-DD-YYYY. Example 06-11-2012 The date must match the format. This can be used to open the trend history to a specific date. For example; the date could be set, the border style to 'dialog', and the 'disable calendar' could be enabled. This would display the trend history for the only date selected. If trend logs do not exists for the date, an error window will be displayed.

The default date, this field is empty, displayed is the day before the current date.

Disable calendar

If enabled the calendar control will not allow for changing the date.

Zoomed in

If enabled the chart will be zoomed in on the X and Y axis to show all the data loaded for the day. User zooming remains enabled.

Automatic close time

The maximum number of seconds the window is to be open. If the value is 0 the window will not automatically close

WRITE BOOLEAN VALUE : ASK USER 2

This is a “WriteValue”. The standard two button selection window is displayed. If a tagname and item are configured for the button and the user selects the button the value (True or False) will be written to the tagname/item. If a tagname is not present a write command is not executed. Each button also has a "log" string. If the string is not blank the string will be written to the 'Event log.'

WRITE BOOLEAN VALUE : ASK USER 3

This is a “WriteValue”. The standard three button selection window is displayed. If a tagname and item are configured for the button and the user selects the button the value (True or False) will be written to the tagname/item. If a tagname is not present a write command is not executed. Each button also has a "log" string. If the string is not blank the string will be written to the 'Event log.'

WRITE BOOLEAN VALUE : ASK USER 4

This is a “WriteValue”. The standard four button selection window is displayed. If a tagname and item are configured for the button and the user selects the button the value (True or False) will be written to the tagname/item. If a tagname is not present a write command is not executed. Each button also has a "log" string. If the string is not blank the string will be written to the 'Event log.'

WRITE FLOAT VALUE 2 : ASK USER

The same as "Write Float Value: Ask User" except the low and high limit reference a tagname/item pair.

WRITE FLOAT VALUE: ASK USER

The user is queried for a value via the GetUserInputFloat command. If the accept button is selected and the value is in range the write command is executed.

WRITE FLOAT VALUE PERCENT : ASK USER

The user is queried for a percent value via the GetUserInputFloat command. The value must be between 0 - 100 and the high/low limits configured. If the accept button is selected and the value is in range the write command is executed.

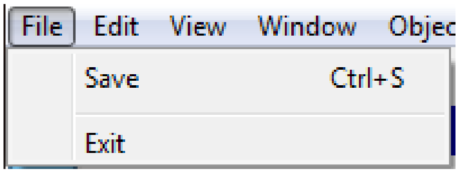
The final value is the percent of the engineering range of the tagname.

Write integer value 2 : Ask user	The same as "Write Integer Value : Ask User" except the low and high limit reference a tagname/item pair.
Write integer value : Ask user	The user is queried for a value via the GetUserInputInteger command. If the accept button is selected and the value is in range the write command is executed.
Write integer value percent : Ask user	The user is queried for a percent value via the GetUserInputFloat command. The value must be between 0 - 100 and the high/low limits configured. If the accept button is selected and the value is in range the write command is executed. The final value is the percent of the engineering range of the tagname.
Write value fixed	Same as script WriteValue with the value set in the mouse command configuration.
Write value percent	This is a WriteValue command. The value is the percent of the engineering range of the tagname. The value must be between 0 - 100.

MENUS

This will cover the menus in a graphic editor window from left to right.

FILE


File
Edit
View
Window
Objec
Save Ctrl+S
Exit

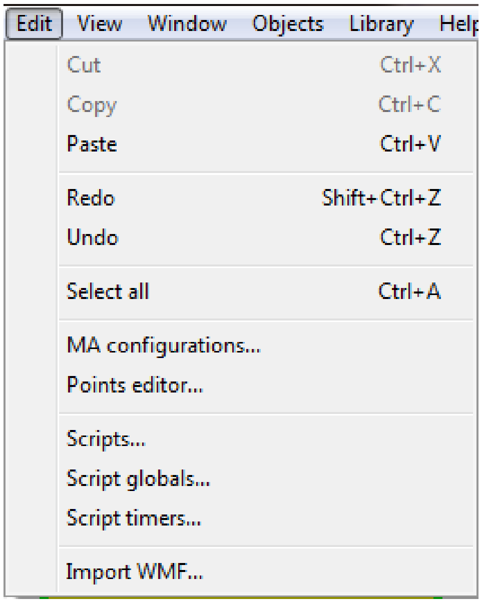
SAVE

Saves the graphic screen to disk.

EXIT

Closes the editing window.

EDIT


Edit
View
Window
Objects
Library
Help
Cut Ctrl+X
Copy Ctrl+C
Paste Ctrl+V
Redo Shift+Ctrl+Z
Undo Ctrl+Z
Select all Ctrl+A
MA configurations...
Points editor...
Scripts...
Script globals...
Script timers...
Import WMF...

CUT/COPY

These menu items perform the normal actions of a modern graphically program.
Cut, copies the selection to the clipboard and deletes the selection.
Copy, copies the selection to the clipboard.

PASTE

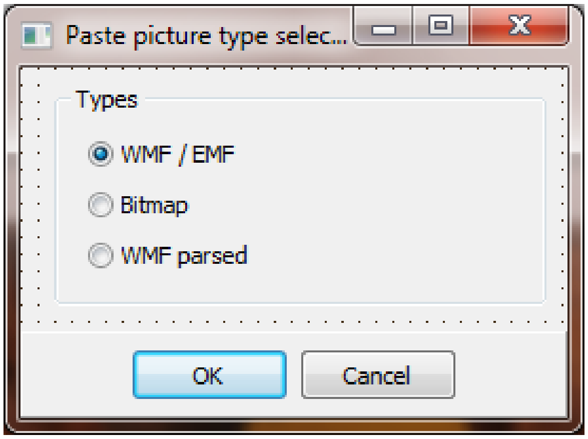
The contents of the clipboard will be pasted to the window. If the contents are of a type native to the program they will be pasted as native. If the clipboard contains a bitmap or JPEG it will be imported and converted to a native bitmap element. If the clipboard contains text it will be imported and converted to a native text element.

If the contents of the clipboard are native elements, the elements to be pasted, are created in the window using one of two methods.

If the "SHIFT" key is not down, the pasted elements are centered on the location of the last mouse down click.

If the "SHIFT" key is down, the pasted element locations are not altered and are pasted to the same location as copied. If the source and destination window are the same, the "new" pasted elements will be on top of the original (copied) elements.

If the program detects an EMF/WMF file a dialog will appear. The HMI can import the image using one of three methods.



Types

● WMF / EMF

○ Bitmap

○ WMF parsed

See the “Import WMF” menu item below.

REDO

Most drawing actions are recorded in a first in last out list. If "Undo" is selected the last action is "rolled back". Redo "rolls forward" in the list. If undo is selected 5 times in a row, without performing any other action, redo can be selected 5 times, if no other actions are performed. See "Undo" below.

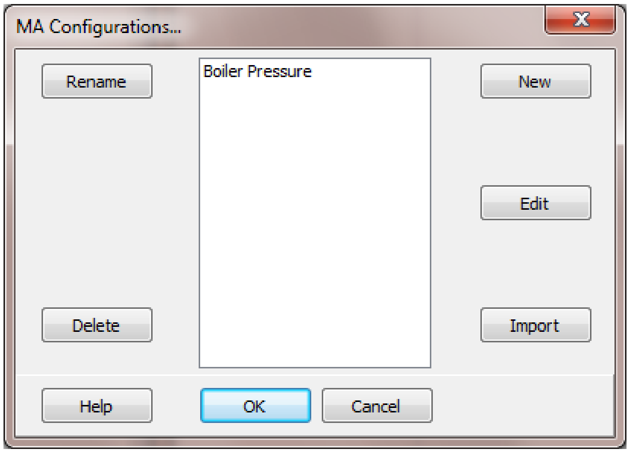
UNDO

Most drawing actions are recorded in a first in last out list. To undo the last action, select undo. It might be possible to undo many previous actions if the action chain has not been cleared. Some drawing actions require the action list to be cleared. If "undo" is selected and before any other drawing action is performed it is possible to "redo" the last action by selecting the redo menu item. See "Redo" above.

SELECT ALL

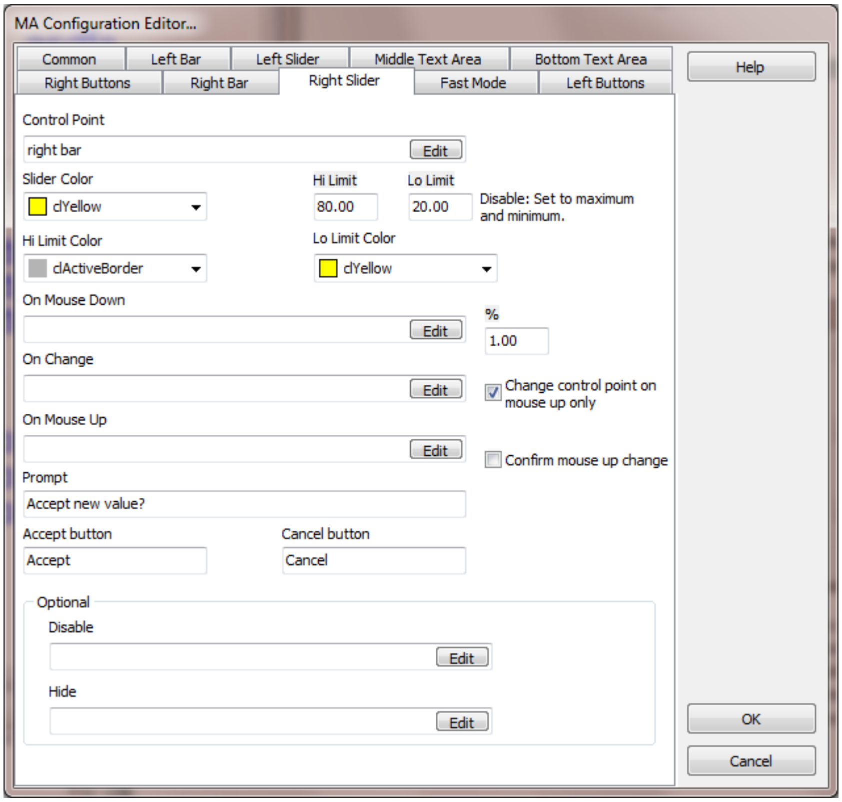
If the current tool selection is the "arrow" all objects on the screen will be selected. If the current tool selection is another tool only those elements that are of the same type will be selected.

MA CONFIGURATIONS


MA Configurations...
Rename
New
Edit
Delete
Import
Help
OK
Cancel

Boiler Pressure

The Manual/Auto (MA) configuration is not contained in the graphic element to allow an MA to be used on a screen and the screen reused. The MA configuration used for an MA element can be set via scripting via the SetMAStationConfiguration command. The graphic element has an initial MA configuration selection.


MA Configuration Editor...
Common
Left Bar
Left Slider
Middle Text Area
Bottom Text Area
Right Buttons
Right Bar
Right Slider
Fast Mode
Left Buttons
Help
Edit
Edit
Edit
Edit
Edit
Edit
OK
Cancel

Control Point: right bar

Slider Color: 🟨 clYellow

Hi Limit: 80.00

Lo Limit: 20.00

Disable: Set to maximum and minimum.

Hi Limit Color: clActiveBorder

Lo Limit Color: 🟨 clYellow

On Mouse Down:

%: 1.00

On Change:

☑ Change control point on mouse up only

On Mouse Up:

☐ Confirm mouse up change

Prompt: Accept new value?

Accept button: Accept

Cancel button: Cancel

Optional

Disable:

Hide:

Bottom Text Area

The bottom text area can show limited text on the left and/or right side. Selecting a tagname and digital item will display the text in the value row 0 or 1. Selecting a tagname and analog item will display the text in row 0 through 7. If the control value is less than 0, the row 0 text will be displayed. If the control value is greater than 7, the row 7 text will be displayed.

Common

Name

The name of the MA configuration.

Caption

The string, if any, to be displayed at the top of the MA element.

Font

The font name and color to use for text.

Font Style

The font style to apply to all text on the MA station.

User Level

The logged on user must have a user level equal to or greater than this value to activate the controls in this MA configuration. If the user level is not sufficient a beep will be played and the control action will be prevented.

Fast Mode

On the left side of the MA are four possible buttons, grouped in two pairs. Each pair has an up arrow button and a down arrow button. If the left slider is enabled the top two buttons will be connected to the left slider. If the right slider is enabled the bottom two buttons will be connected to the right slider. The top button of the pair will increase the slider and the bottom button of the pair will decrease the slider. The buttons have two modes: Fast Mode and Slow Mode. If the checkbox is not checked all buttons operate in slow mode. If the checkbox is checked all the buttons operate in fast mode.

Fast and slow mode are the amount of change each time one of the buttons is pressed. The percentage is percent of full scale of the data point connected to the slider.

Example
The fast mode is set to 5.00%.
The slow mode is set to 1.00%.

The left slider is connected to a data point and the range of the data point is 100.

The current value of the data point is 50.
If fast mode is enabled, the checkbox is checked, and the increase button for the left slider is pressed the data point would be changed to 55.

The current value of the data point is 50.
If fast mode is not enabled, the checkbox is unchecked, and the increase button for the left slider is pressed the data point would be changed to 51.

Name

The name of the checkbox. If this field is blank the fast mode checkbox will not be visible and the increase/decrease buttons will operate in slow mode

Fast Mode

Enter the percent of change per button click when fast mode is active. If the value is less than are equal to 0 the value will be set to 5.

Slow Mode

Enter the percent of change per button click when fast mode is not active. If the value is less than are equal to 0 the value will be set to 1.

Inhibit Fast Mode (Optional)

Select a data point to enable or disable the fast mode. If the checkbox is inhibited (disabled) slow mode is selected regardless of the checkbox checked state. (true = inhibit)

Left Bar, Right Bar

Monitored Point

The analog data point to monitor for the bars percent of fill.

Bar Color

The bar has two colors. The foreground and the background. The foreground color is the color of the moving bar. The background color is the color of the unfilled portion of the bar.

Edge

The border of the fill bar.

Direction

Down:
The bar will fill from the top to the bottom.

Middle:
The bar will fill from the middle and fill toward the top if the percent of full scale is greater than 50 and fill towards the bottom if the percent of full scale is less than 50.

Up:
The bar will fill from the bottom to the top.

Tick Color

The color of the tick marks on the side of the bar.

Hi Hi, Hi, Lo, Lo Lo Alarm color

The monitored point has four alarm points. Each alarm can be enabled or disabled. If the alarm is enabled a small symbol will be drawn next to the bar at the alarm setting value. Select the color for each alarm point.

Left Buttons

See **Fast Mode** for a description of button operation.

These are optional.

Left Slider, Right Slider

The buttons can be configured to also execute a script when pressed.

Increase On Click:
When the increase button is clicked execute the selected script.

Decrease On Click:
When the decrease button is clicked execute the selected script.

Left Slider, Right Slider

Control Point

The analog data point the slider reads for position and the data point written to when the slider is moved by the user.

Slider Color

The color of the slider indicator.

Hi Limit Color

The color of the high limit indicator.

Lo Limit Color

The color of the low limit indicator.

Hi Limit

The maximum value the slider can be moved by the user. To disable set the value to the high range of the control point.

Lo Limit Color

The minimum value the slider can be moved by the user. To disable set the value to the low range of the control point.

On Mouse Down (Optional)

A script to execute when the mouse button is pressed in the slider indicator.

On Mouse Change (Optional)

A script to execute when the mouse button changes the position of the slider.

On Mouse Down (Optional)

A script to execute when the mouse button is released after the mouse was pressed in the slider indicator.

%
When the slider is moved, after the mouse button is pressed in the slider indicator, this value determines how much the slider must change position, in percent of full scale, before a write command is issued to the control point. If the "Change control point on mouse up only" attribute is checked this setting is ignored

Change control point on mouse up only

When enabled the a write to the control point will not occur until the mouse button is released. See the "Confirm mouse up change" attribute.

Confirm mouse up change

When enabled the write to the control point does not occur until the confirmation dialog is executed. If the result of the confirmation dialog is false a write to the control point is not executed and the on mouse of script, if configured will not execute. See the "Change Control point on mouse up only" attribute. This attribute can also be used without the "Change Control point on mouse up only" attribute set.

Prompt

The text to display in the prompt area of the configuration dialog, if the "Confirm mouse up change" attribute is enabled.

Accept Button

The text to display in the accept button of the confirmation dialog, if the "Confirm mouse up change" attribute is enabled.

Cancel Button

The text to display in the cancel button of the confirmation dialog, if the "Confirm mouse up change" attribute is enabled.

Disable (Optional)

The control point to disable the slider. (true = disabled)

Hide (Optional)

The control point to hide the slider. (true = hide)

Middle Text Area

The middle of the MA station has three lines of text. The lines can be connected to the sliders, the fill bars or no connection. If connected the value of the connection is shown along with a caption.

If the connection is a slider and the mouse button is pressed on the line of text a dialog will appear to allow setting the value of the slider.

Connection

The control element on the MA station to connect to the text readout.

Color

The text color of the line.

Slider disabled (On Slider configuration tab)

If the control element this line of text is connected to is disabled the mouse down action is disabled. Otherwise it is always enabled.

Caption

The caption for the line of text.

Disable Mouse

When connected to a slider and this attribute is enabled the mouse will not perform any actions. The user clicking on the text will not cause any change.

Note: When a text line is connected to a slider and the slider is not disabled or hidden and the user presses the mouse in the text area, a GetUserInputFloat dialog is displayed to allow the user to enter a value that is limited by the range of the slider low and high limits. If the value is in range and the user selects the accept button the value is written to the slider tagname and the OnMouseUp script of the slider is called if it is assigned. If the user selects the cancel button the OnMouseUp script is not called. The OnMouseDown and OnChange scripts of the slider are not called via the middle text area.

Right Buttons

Caption

The string, to be displayed in the button.

On Click (Optional)

The script to execute when the button is clicked.

Control Point (Optional)

The digital data point the button send the data value to when the button has been clicked.

Data Value

The button will perform the action selected.

Set Bit:
The button will write to the data point specified at the control point a "1".

Reset Bit:
The button will write to the data point specified at the control point a "0".

Toggle Bit:
The button will write to the data point specified at the control point a "1" and then a "0". The length of time between the 1 and the 0 is variable. It depends on such thing as the communication protocol, the physical media, etc..

Disable (Optional)

The control point to disable the button. (true = disabled)

POINTS EDITOR

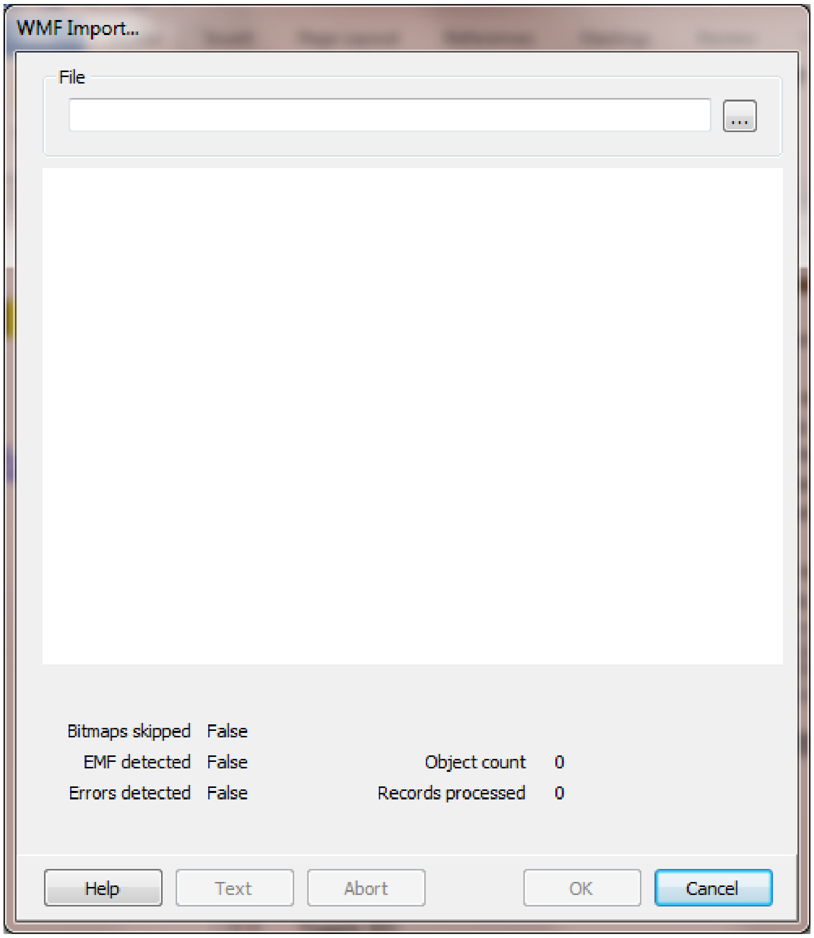
”Points” and the points editor are covered in the sections “Points” in another area of the manual.

SCRIPTS

”Scripts”, ”Scripts globals” and ”Scripts timers”, are covered in the sections “Points” in another area of the manual.

IMPORT WMF

Provides for the importing and parsing of EMFWMF into native graphic elements.



Bitmaps skipped False
EMF detected False
Errors detected False
Object count 0
Records processed 0

A WMF (Windows Meta File) can be pasted into the drawing as a WMF element or it can be parsed, when pasted/imported, in an attempt to create native HMI objects from the WMF data structure. **CAUTION:** The parsing of a WMF file can create 1000s of graphic elements. When the parsing is complete and the user selects the OK button the native graphics elements are grouped and placed in the top left of the window.

When a WMF is parsed some record types are not converted. Bitmap, embedded EMF (Enhanced Meta File) and text are all skipped in the conversion. If you have a WMF file and the parsing result is not satisfactory to you, please contact support.

When a WMF is pasted/imported as a WMF it can be scaled by selecting and moving one of the selection handles. When it is parsed into native HMI elements and grouped, use the scale command to scale the group.

File

Select a WMF file to import.

Bitmaps skipped

If true, bitmap records in the WMF structure were detected and skipped.

EMF detected

If true, embedded EMF data was detected in the WMF structure was detected and skipped.

Errors detected

If true, some kind of error was detected in the WMF structure. Please send the file to support.

Object count

After the WMF is parsed this is the count of native objects created.

Records processed

This is the count of records detected in the WMF structure and processed

Text button

While the WMF structure is being parsed a log is created. To view the log select this button.

Abort button

WMF structures can be very large. Selecting this button will stop the processing of the WMF structure.

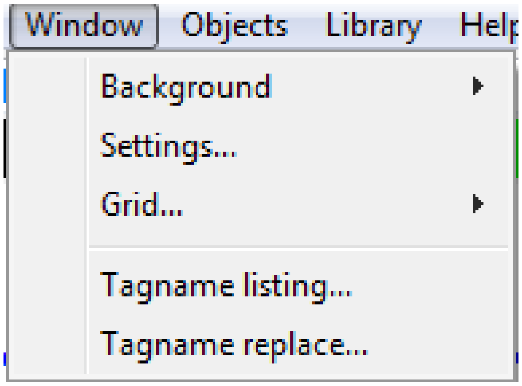
OK button

If after the WMF structure is parsed and at least one object was created select this button to add the object to the window.

Cancel button

Select this button to exit. Any imported data will be discarded.

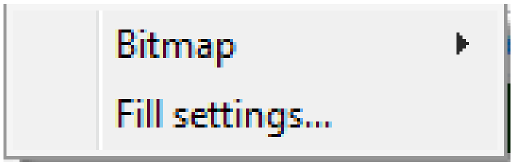
WINDOW

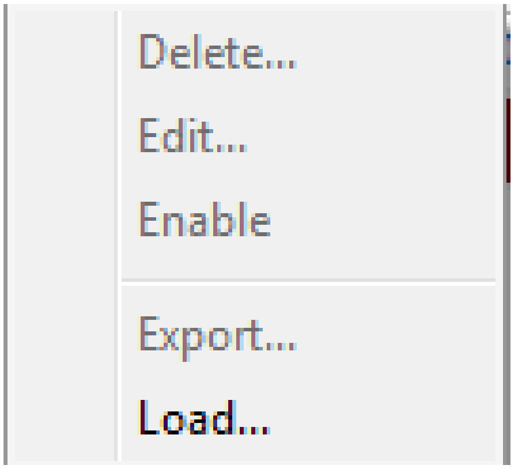

Window
Objects
Library
Help
Background
Settings...
Grid...
Tagname listing...
Tagname replace...

BACKGROUND

The window background can be filled with a solid color or a brush pattern with a fore ground and back ground color. It can also dislpay a bitmap in the background.

BITMAP

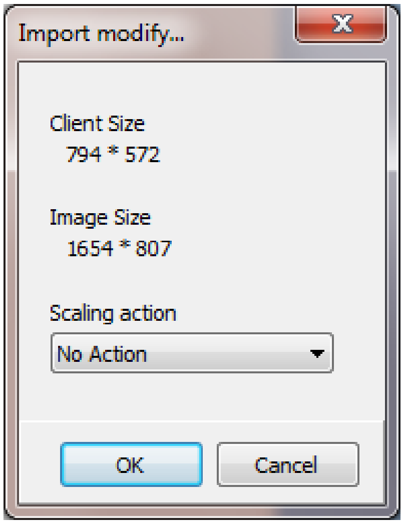

Bitmap
Fill settings...



DELETE	If a bitmap is not loaded into the background this menu will be disabled. If enabled and selected the internal background bitmap will be deleted.
EDIT	If selected the HMI bitmap editor opens. The bitmap editor is covered under “Bitmap editor” in this manual.
ENABLE/DISABLE	If a bitmap is loaded it can be enabled to display or disabled. Disabling the bitmap does not delete it
EXPORT	This this menu is enabled and selected the internal background bitmap can be saved to a bitmap file.

LOAD

A bitmap can be loaded to the internal background bitmap. When the bitmap is selected the file type can be EMF, BMP, EMF, JPG or JPEG. When the bitmap is selected if it is not the exact size of the client area of the window (see settings below) a dialog will appear allowing for several actions.



Client Size
794 * 572

Image Size
1654 * 807

Scaling action
No Action

No Action:
The bitmap will be imported into the window and centered to the window.

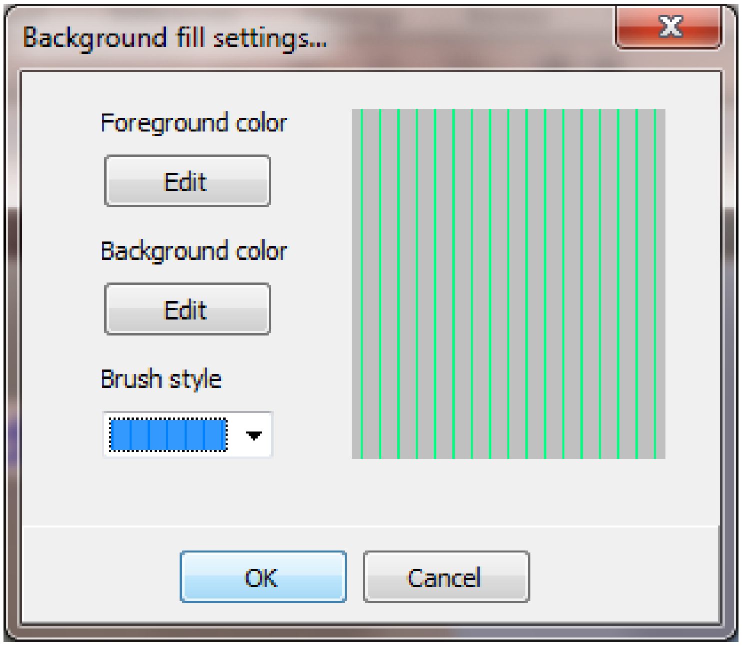
Crop:
The bitmap will be aligned to the top/left of the window and if the bitmap is larger than the client area of the window the bottom and right will be cropped to fit the window.

Expand, Shrink:
The bitmap will be expanded or shrunk to fill the client area of the window.

Note: If on import/load the bitmap does not fill the client area the current fill settings are applied, followed by the internal bitmap generation. So, first apply any desired fill settings, if applicable, and then import/load the bitmap.

FILL SETTINGS

This provides for the selection of the foreground color. If a brush pattern is selected a background color can also be selected.


Background fill settings...
Foreground color
Edit
Background color
Edit
Brush style
OK
Cancel

SETTINGS

Title

This string will appear in the title bar of the window if the window is configured to show the title bar.

Border Style

Windows provides for several window border styles. None, single, sizable and dialog. These styles can be viewed by selecting the "Show Window" button in the middle of the screen.

Border Icons

These are the normal "Windows" icons in the top right corner of the window. If the "Maximum" or Minimize" is enabled the "System" must be enabled.

Stay on Top

This instructs the window to stay on top of all other windows. More than one window open with this attribute set will cause unpredictable window behavior.

Make fully visible

On multi-monitor systems when the window is positioned the window may span several monitors. If this attribute is enabled the form will be repositioned to fully fit on the monitor, if possible. Note: The main monitor is the target monitor for the window when this attribute is enabled.

Window Position

Select the position to open the window. As designed opens the window in the last position it was during configuration.

Only One

If this attribute is enabled the program will allow only one window with this name to be opened.

Window State

This determines how the window is to be displayed when opened. Normal is the configured size. Maximized, the window will fill the main screen. Minimized will show the window as a small bar on the bottom of the screen (as determined by Windows).

Window Width/Height

This is the "normal" size of the window, including any border and title bar. The border style and the "normal" size of the window determine the client width and height. Refer to the client size when working with importing to the background.
Caution: When changing the window size verify all the graphic elements on the window fully fit within the desired window size before adjusting the window size.

Show Window

View the window with the selected settings. When the window is visible, click the mouse button to close the window.
Note: The size of the window is limited to the monitor size.

User Level

At runtime the logged on user must have at least the level entered to view the window.

Automatically close

The number of seconds the window will be open. If the value is 0 the window will not automatically close.

Scripts

On Window Open

If selected, the script will run once when the window is opened. It will run each time the window is opened. The script is executed as the next to last action for opening a window. The last action is to check the user level. If the logged on user level is not equal to or greater than the user level the window is destroyed.

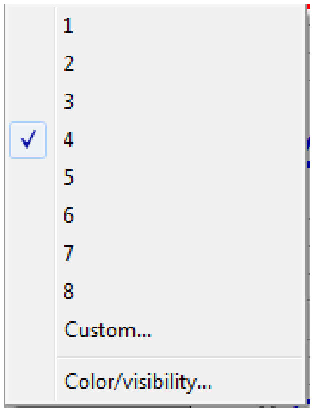
On Window Close

If selected, the script will run once when the window is closed. It will run each time the window is closed. Warning: The window may be closed before the script executes.

On Viewing

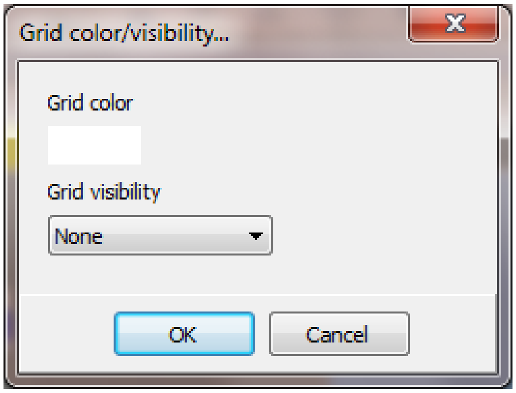
If selected, the script will run while the window is opened. The script will be put in the queue and executed. When the script is complete it will be placed in the queue and executed. This is repeated until the window is closed. The script should execute about every second. The number of windows open and other scripts executing can affect the frequency of execution.

GRID



The drawing in the window can be drawn with the element points aligned to a grid. The grid can be set from 1 (no grid) to 100. The default is 4. Select the custom menu item to enter values greater than 8.

COLOR/VISIBILITY



Grid color

Grid visibility

None

The grid points can be displayed. Select the desired color.

None:

The grid pixels are not visible.

Above:

The grid pixels will be drawn after the background and before the elements are rendered. The graphic elements will cover the pixels.

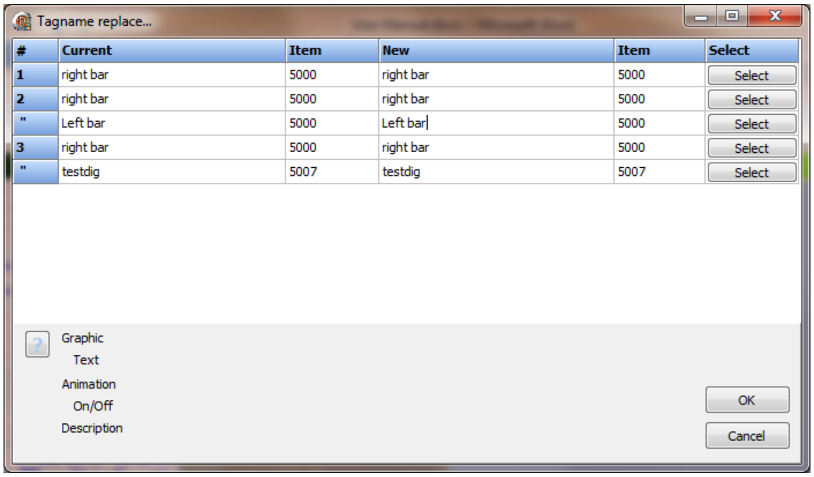
Below:

The grid pixels will be drawn after the background and after the elements are rendered. The grid pixels will cover the graphic elements.

TAGNAME LISTING

This displays a list of all the selected elements animation tagnames. If no elements are selected it shows the animation tagnames for all the elements in the window. Selecting a tagname in the displayed list will select all elements using the tagname in an animation.

TAGNAME REPLACE

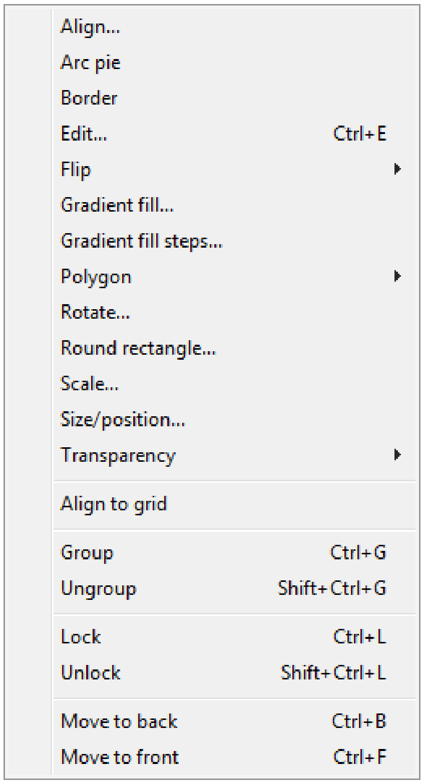


#	Current	Item	New	Item	Select
1	right bar	5000	right bar	5000	Select
2	right bar	5000	right bar	5000	Select
"	Left bar	5000	Left bar	5000	Select
3	right bar	5000	right bar	5000	Select
"	testdig	5007	testdig	5007	Select

Graphic
Text
Animation
On/Off
Description

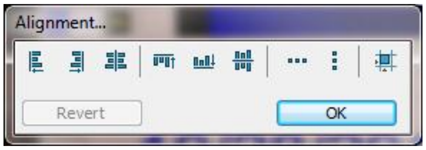
This displays a list of all the selected elements animation tagnames. If no elements are selected it shows the animation tagnames for all the elements in the window. The fixed column, first column from the left, shows a graphic element number. A graphic element can have more than one animation. The animations for each element are grouped together. If a " symbol is shown in the column it belongs to the element above. The first tagname/item from the left is the current configuration. The next set tagname/item is also the current tagname/item on window open. The second pair can be changed by typing in the cell or selecting the "select" button for the row. The item type for the new item must match the current item. The graphic elements type and the animation type are displayed at the bottom of the window. The description field is for the current tagname for the selected row.

OBJECTS


Align...
Arc pie
Border
Edit... Ctrl+E
Flip
Gradient fill...
Gradient fill steps...
Polygon
Rotate...
Round rectangle...
Scale...
Size/position...
Transparency
Align to grid
Group Ctrl+G
Ungroup Shift+Ctrl+G
Lock Ctrl+L
Unlock Shift+Ctrl+L
Move to back Ctrl+B
Move to front Ctrl+F

ALIGN

When one or more graphic elements have been selected this menu item will be enabled. An alignment palette will appear.


Alignment...
Revert
OK

The selections are align: left, right, horizontal centers, top, bottom and vertical centers. The next two selections are distribute horizontal and distribute vertical. The last selection is align to grid.

ARC PIE

When one or more arc graphic elements have been selected this menu item will be enabled. This item toggles the "wedge" attribute. An arc is a section of a complete circle. When "wedge" is active a line will be drawn from the center point of the circle to both end points of the arc, and the "wedge" will be filled with the brush color and pattern as configured.

BORDER

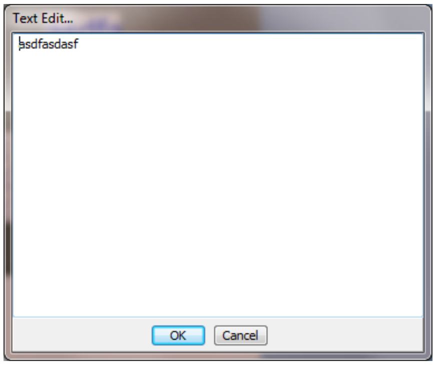
This will toggle the border attribute of rectangles. When enabled the brush is set to clear. The rectangle is drawn using the foreground and background color and the pen width and style. The foreground color and background color indicate the colors that appear on the left and top or the right and bottom of the rectangle respectively. The pen width parameter specifies the width of the frame.

To create a raised effect, the foreground should be a light color and the background should be a shadow color. To create a depressed effect, the foreground should be the shadow color and the background should be the light color. To create a beveled effect, draw a frame immediately inside another frame with the colors reversed.

EDIT

Some object have additional attributes that can be configured. Some of the object editors are discussed in “Complex Objects” and “Button Objects”.

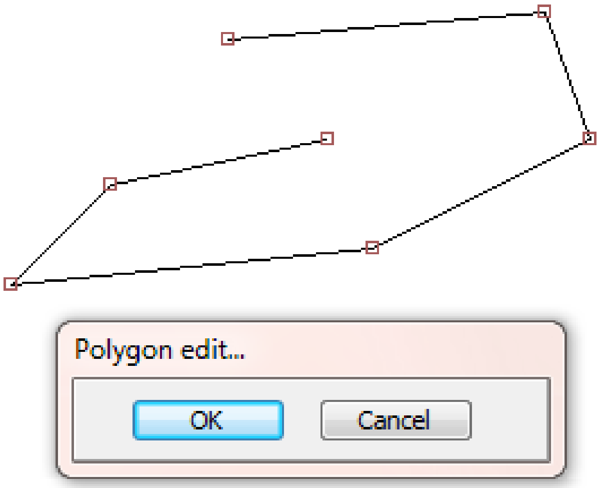
TEXT



asdfasdasf

When one text graphic element has been selected this menu item will be enabled. Select edit to change the text.

Polyline, Polyline Freehand



When one polygon graphic element has been selected this menu item will be enabled.

A polyline is a group of lines. The first line is two points. All subsequent lines use the last line end point as the start point of the next line.

The points can be moved.
1. Press the left mouse button in a point selection rectangle and without releasing the mouse button move the mouse and the point will move.

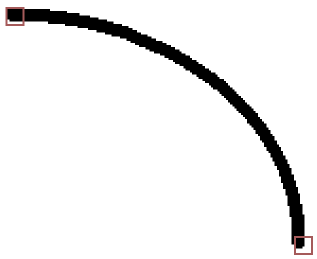
2. While holding done the "shift" key click the mouse button in the desired point selection rectangles. This allows for the selection of multiple points. Once the selection is made press the left mouse button in one of the selected point selection rectangles and without releasing the mouse button move the mouse and the points will move.

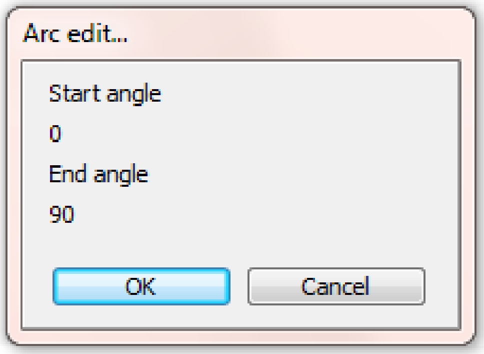
3. When a point or points have been selected the arrow keys can be used to move the points.

To delete a point, select the point and press the "DEL" key. The polygon must have at least two points. If the line consists of only two points the points cannot be deleted.

To add a point, click the left mouse button on the line at the location of the desired new point.

ARC/WEDGE




Arc edit...

Start angle

0

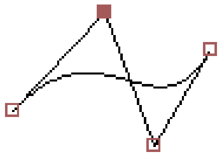
End angle

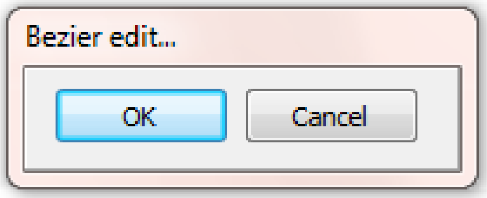
90

When one arc graphic element has been selected this menu item will be enabled.

An arc is a portion of a circle with a start angle and an end angle. Press the left mouse button in a point selection rectangle and without releasing the mouse button move the mouse and the endpoint will move.

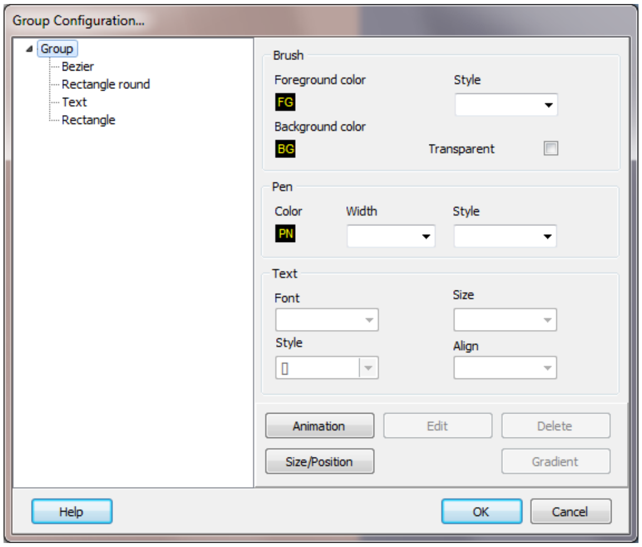
BEZIER LINE




Bezier edit...

When one Bezier graphic element has been selected this menu item will be enabled. When editing this control it responds like a polygon.

GROUPS


Group Configuration...
Group
Bezier
Rectangle round
Text
Rectangle
Brush
Foreground color
Style
FG
Background color
BG
Transparent
Pen
Color
Width
Style
PN
Text
Font
Size
Style
Align
Animation
Edit
Delete
Size/Position
Gradient
Help
OK
Cancel

The group editor is composed of several sections.

The left section (Group) list all the elements of the group by element type.

The right sections (Brush & Pen) list attributes that are commons to most elements.

The right section (Text) only applies to those graphic elements that contain text.

The right bottom section (Animation, Edit, etc. buttons) is used for extended editing of the graphic element of a group.

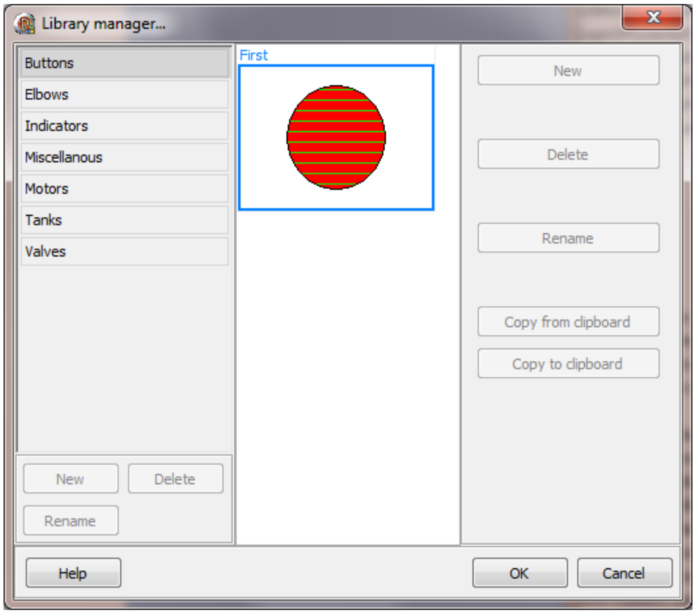
When an element is selected from the 'Group' section' the other sections update and display the values of the selection graphic element.

Some elements or element attributes cannot be edited why grouped.

GAUGE AND BUTTON

The gauge and button editors are covered in the section “Complex objects” and “Buttons objects”.

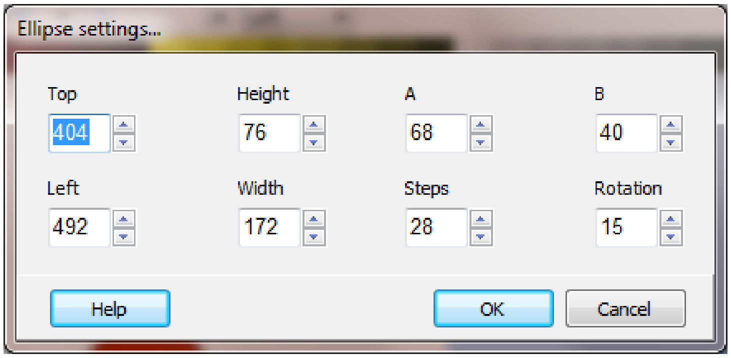
LIBRARY


Library manager...
Buttons
Elbows
Indicators
Miscellanous
Motors
Tanks
Valves
New
Delete
Rename
First
New
Delete
Rename
Copy from clipboard
Copy to clipboard
Help
OK
Cancel

When one library graphic element has been selected this menu item will be enabled. This will display the library manager window to allow editing of the library elements.

The library feature is discussed later in this section.

ELLIPSE


Ellipse settings...

Top: 404

Height: 76

A: 68

B: 40

Left: 492

Width: 172

Steps: 28

Rotation: 15

Top/Left

Defines the top and left position on the window

Height/Width

Defines the height and width of the element.

A/B

Defines the two end points of the ellipse.

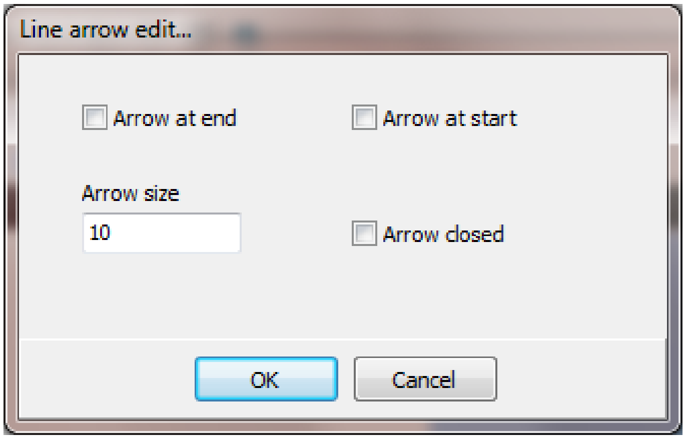
Steps

Defines the number of segments used to draw the ellipse. Larger numbers display a smoother edge to the ellipse.

Rotation

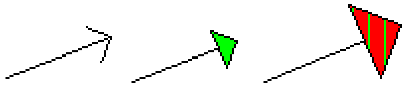
The amount the ellipse is rotated on the center axis.

LINE



☐ Arrow at end
☐ Arrow at start
Arrow size: 10
☐ Arrow closed

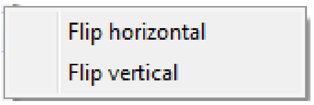
An arrow can be drawn at the beginning and end of the line. The arrow size can be adjusted. If “Arrow Closed” is enabled a line is drawn to enclose the arrow. The brush attributes are applied to the interior of the arrow.



BITMAP

The bitmap editor is covered in another section.

FLIP



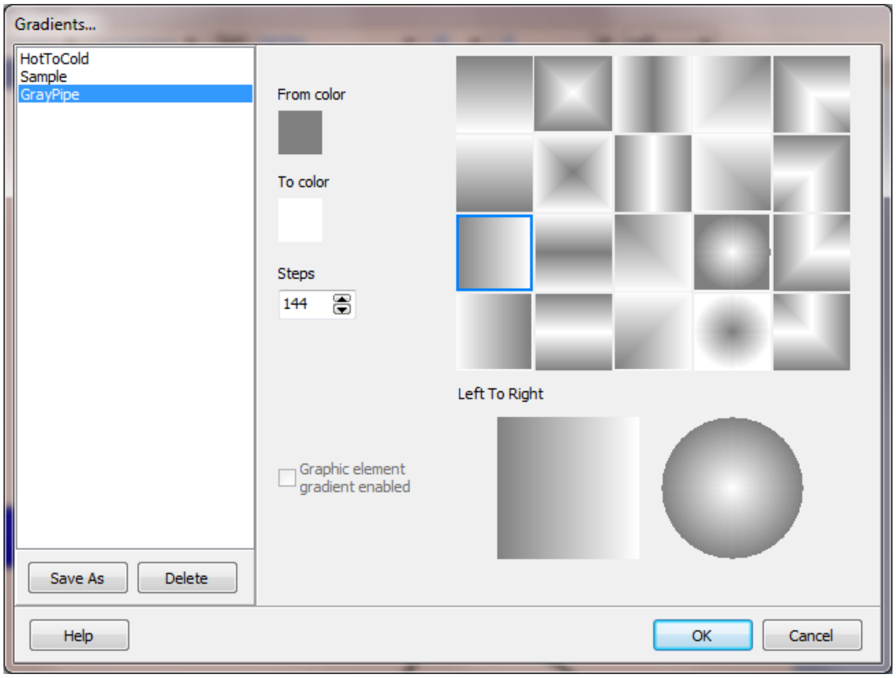
When one or more graphic elements have been selected this menu item will be enabled. The element end points will be flipped vertically or horizontally.

If more than one element is selected the elements will also be flipped in relation to each other.

Not all elements contain end points to be flipped. A flipped circle looks the same after it is flipped as before it was flipped. Selecting and flipping two circles will cause a difference in when comparing the elements to each other.

Library elements do not have end points to flip.

Gradient Fill



From color

To color

Steps
144

Left To Right

☐ Graphic element gradient enabled

Some graphic elements (rectangles, circles and polygons) can be filled with a gradient fill.

From Color

This is the starting color of the fill. It is also the foreground color of the element.

To Color

This is the ending color of the fill. It is also the background color of the element.

Direction Grid

The grip displays the gradient fill selections.

Steps

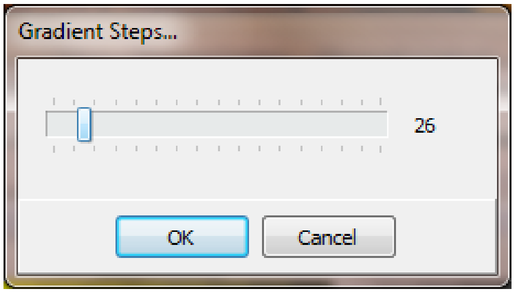
This is the number of steps or bands created to fill the element. Some direction selections double the number of bands to fill the element. Note: Use the lowest number of steps to achieve the desired effect. The lower the steps count the faster the element is drawn.

Graphic element gradient enabled

This must be checked for the element to be displayed with a gradient.
Note: To fill a polygon the polygon must be closed via the polygon menu.

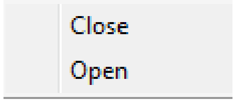
The list box on the left is used to store gradient settings that can be applied to elements. If one of the list elements is highlighted it is the current setting for the graphic element. Select the "Save As" button and supply a name to save the current settings to a file. Select the "Delete" button to delete one of the saved settings. This does not affect any elements.

GRADIENT FILL STEPS



When one or more arc graphic elements have been selected this menu item will be enabled. This allows for setting the number of steps a gradient fill uses to fill the element. Refer to Gradient Fills for more information.

POLYGON OPEN/CLOSE



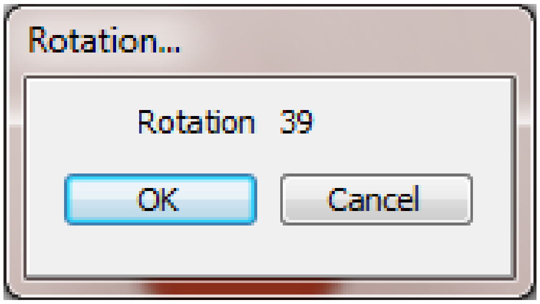
Close:

If the "Close" menu item is selected a line will be drawn from the first line end point, the start point, and the last line end point, and the result will be filled with the brush color and pattern. If after creation the final graphic element has the start and end point connected and you want the brush color and pattern to fill the result you must select the "Close" menu item.

Open:

The opposite of "Close". See above.

ROTATE



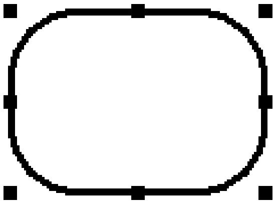
Rotation 39

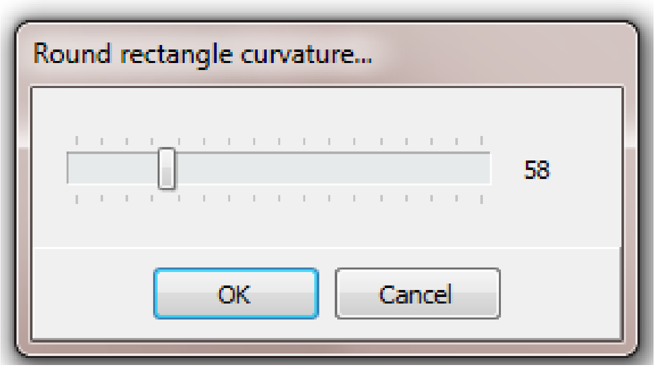
When one or more graphic elements which can be rotated have been selected this menu item will be enabled. Text, polygons and bitmaps can be rotated. After the menu item is selected a dialog window will appear indicating the amount of rotation. Press the left mouse button in the window and hold it down while moving the mouse. The selected elements will rotate.

Or click the left mouse button in the window and use the left and right arrow keys to rotate the selected elements.

Note: To provide rotation animation at runtime a copy of the original bitmap is saved. If the size of the bitmap is changed at design time and afterward rotated at design time the size of the element will revert to the original size of the bitmap.

ROUND RECTANGLE





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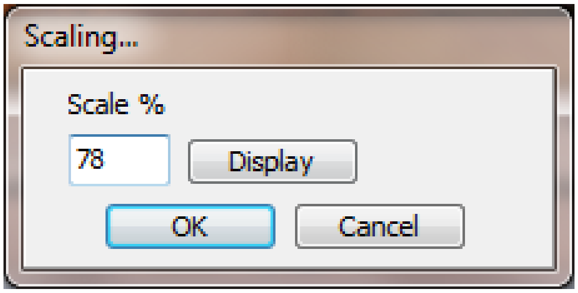
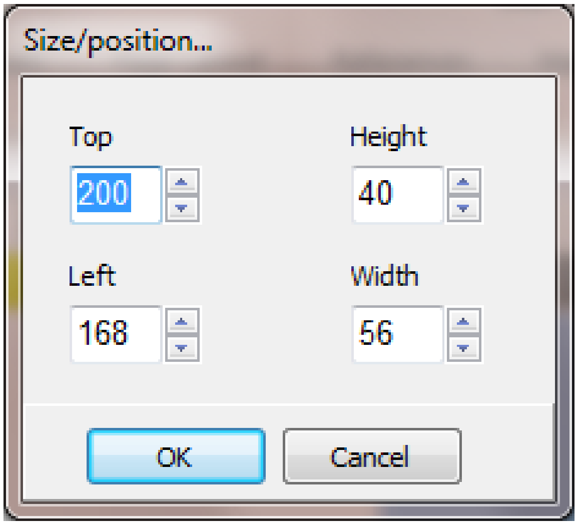
When one or more round rectangle graphic elements have been selected this menu item will be enabled. A dialog will appear to set the value.

SCALE

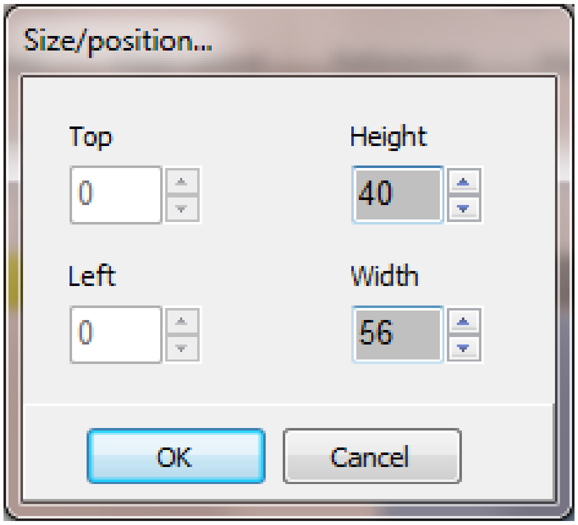

Scaling...
Scale %
78
Display
OK
Cancel

When one or more graphic elements have been selected this menu item will be enabled. A dialog will appear to scale the elements. The scaling is in percent Values greater than 100 increase the size of the elements. Values less than 100 decrease the size of the elements. Selecting "Display" scales the elements, the objects are rendered at the new size and the scale factor is set back to 100. Changing the scale factor will scale the elements using the current size.

SIZE/POSITION

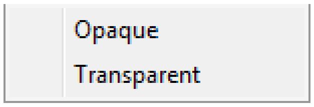

Size/position...
Top
200
Height
40
Left
168
Width
56
OK
Cancel

When one graphic element has been selected this menu item will be enabled. A dialog will appear to allow entering the elements position or size.



When more than one graphic element has been selected the top and left cannot be altered. Changing the height or width will change all objects selected.

TRANSPARENCY



When one or more graphic elements have been selected this menu item will be enabled. An element can have a foreground color, a background color, a brush pattern and can be transparent or opaque. These four attributes work together to render the element.

For a non-filled object set the brush style to "Clear".

If the brush style is "Solid" only the foreground color is visible.

If the brush style is not "Clear" or "Solid" then the background color can be visible **IF** the transparent attribute is set to "Opaque".

If the transparent attribute is set "Transparent", the brush will draw the pattern with the foreground color and the background color will not be drawn. (The object will be partially filled with the brush pattern.)

ALIGN TO GRID

The selected objects will be aligned to the grid using the current grid setting. The default setting is configured in the project settings.

GROUP

The selected objects will be grouped to form a new "group" object. This action cannot be undone. The group can be “ungrouped.

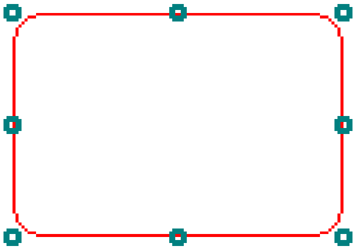
UNGROUP

The objects in the selected group object will disconnected from the group and the group object will be deleted. This action cannot be undone.

LOCK/UNLOCK

An object can be locked in place and cannot be moved or resized until the object is unlocked.

1. When an object is locked the 8 selection rectangles that appear when an object is selected will be 8 circles.
2. Locked objects included in a group are unlocked when the group is created. The group can be locked.
3. Objects in a locked group can be resized and moved using the "group editor".
4. Locking only applies during design time. Locking does not apply to objects during runtime.



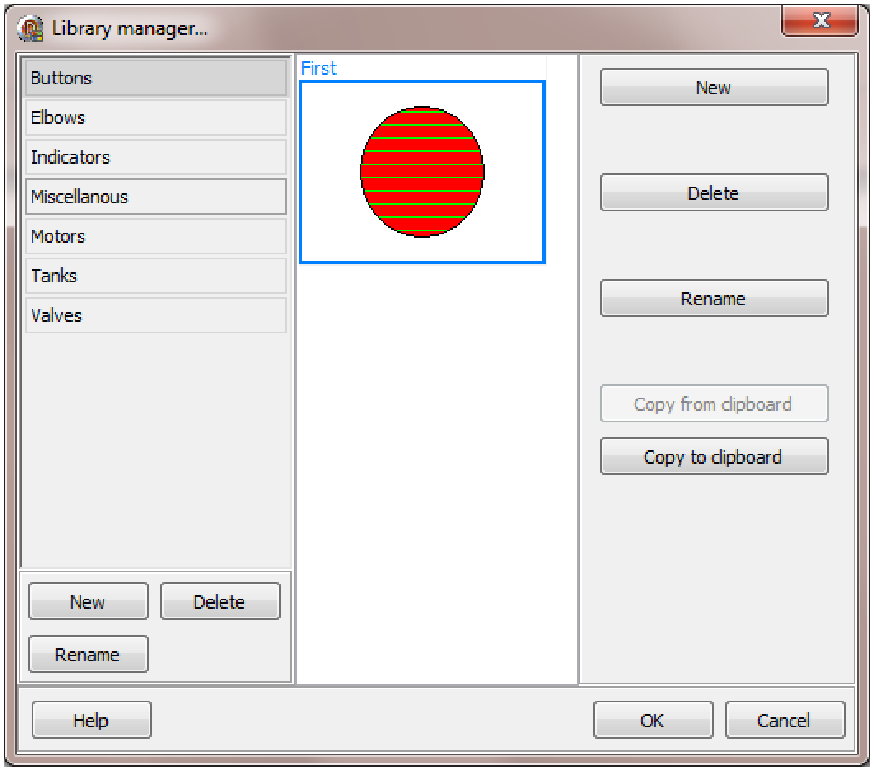
MOVE TO FRONT/BACK

When one or more graphic elements have been selected this menu item will be enabled. The elements are drawn in the order of creation. The most recent element is drawn last and if the objects overlap it appears to be on top of any other elements.

Selecting "move to front" moves the selected element to the end of the creation (last element created) list and causes it to be drawn last.

Selecting "move to back" moves the selected element to the beginning of the creation (first element created) list and causes it to be drawn first.

Note: Not all graphic elements respond to "layering" for rendering the element and these commands may not cause a change in the visual ordering.


Library manager...
Buttons
Elbows
Indicators
Miscellanous
Motors
Tanks
Valves
New
Delete
Rename
First
New
Delete
Rename
Copy from clipboard
Copy to clipboard
Help
OK
Cancel

Library elements are collections of elements. When the library element is referenced in a window it is rendered the same in all uses. Changing the library element changes the image in all uses.

Note: The library only contains HMI graphic elements. If you have an image you want placed in the library, first paste it into a graphic window. Then continue from 2.

Create a new library element:

1. Create an element(s) or copy existing graphic elements.
2. Copy the HMI element(s) to the clipboard.
3. Select Library/Edit.
4. Select the group, left column, to contain the new library element.
5. Select "New" button and enter a name. The name must be unique for the group. Or select the library element to change.
6. Select the display rectangle in the middle containing the name entered.
7. Select the "Copy from clipboard" button.
8. A scaled version of the contents of the clipboard will be displayed.

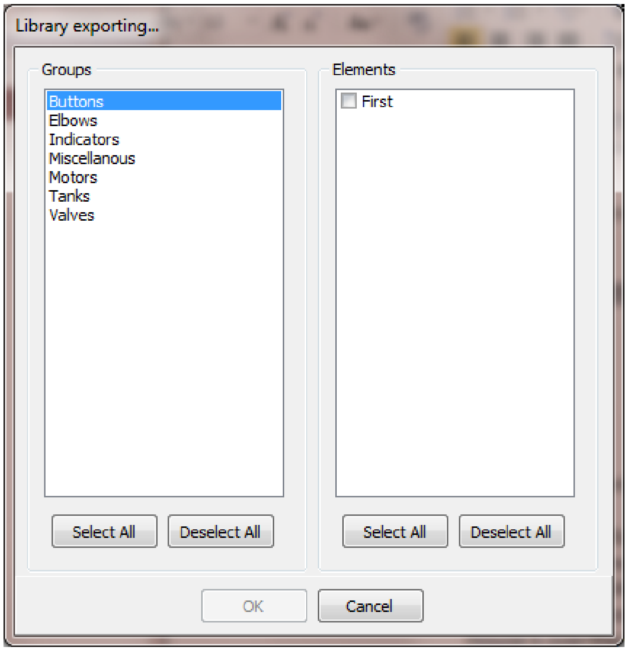
To use an element in a window:

1. Select Library/Edit.
2. Press the left mouse button in the desired element.
3. While holding down the mouse button, drag the mouse to the window. The cursor will change to the "drop" image when the mouse is over the window and it can accept the drop.
4. Release the left mouse button and the library element will appear in the window.

Library element animations are limited.

To edit the contents of an element:
1. Select the element and select the "Copy to clipboard" button.
2. Paste the clipboard into a window.

LIBRARY EXPORT

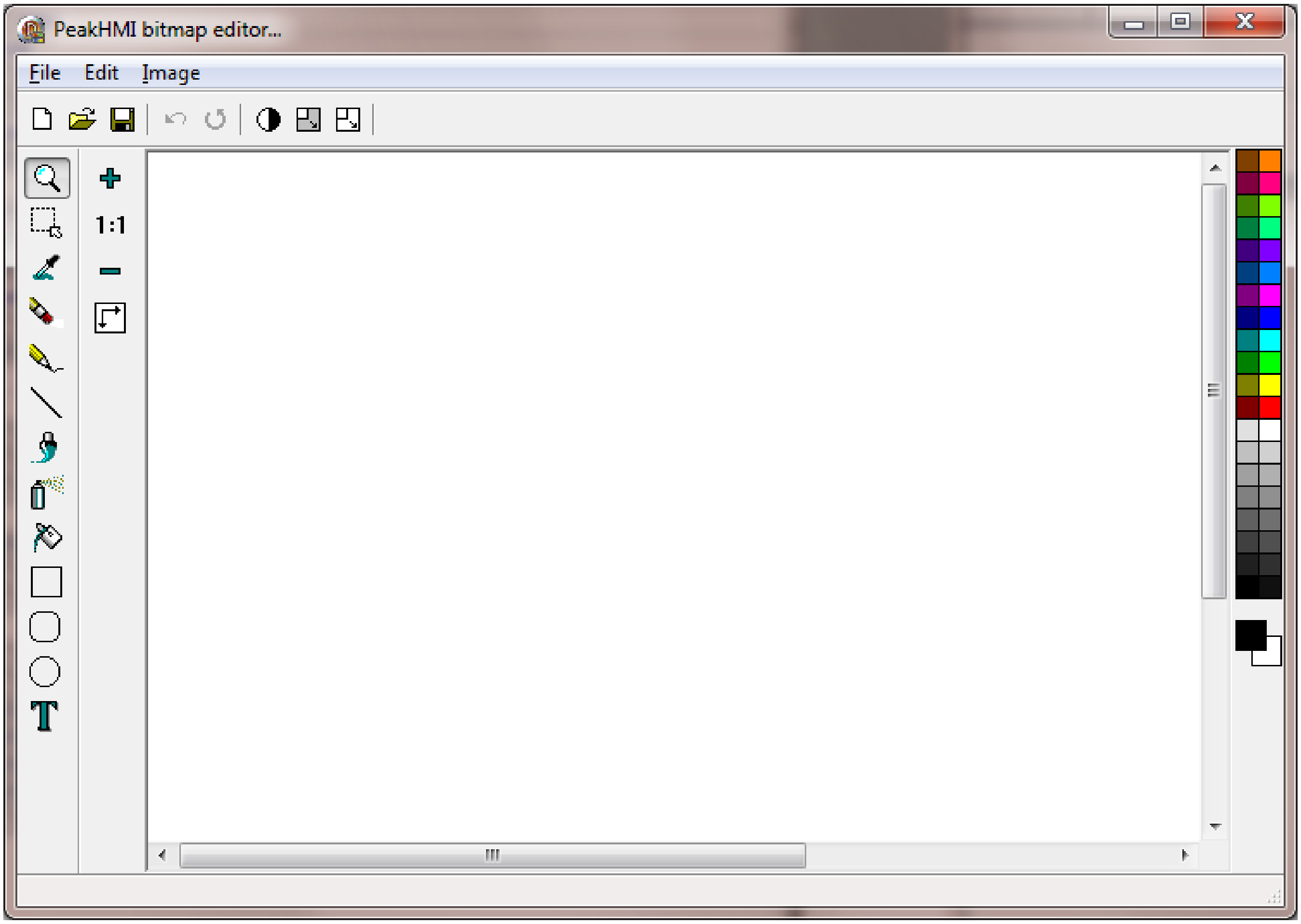

Library exporting...
Groups
Buttons
Elbows
Indicators
Miscellanous
Motors
Tanks
Valves
Select All
Deselect All
Elements
☐ First
Select All
Deselect All
OK
Cancel

Select the elements to be exported to a file.

LIBRARY IMPORT

Select a file of library elements that were exported. This will import the library elements into the project.

BITMAP EDITOR


PeakHMI bitmap editor...
File
Edit
Image
1:1

The bitmap editor is a general purpose bitmap editor that provides basic bitmap editing. The tools are on the left side, color selection is on the right side.

Move the mouse over an icon and a “Tool tip” will appear.
Left click a color to set the foreground and right click a color to change the background.

SCRIPTING

The HMI was designed to not require any scripting. That is still a design goal as new features are added. Sometimes, scripting must be used when the HMI does not contain a built in function or the task is not something we could predict a user would need. And some tasks are just suited for scripting because of the nature of the task.

The scripting language used is Pascal. It is simple and strongly type checked. Using scripting should be fairly simple as it is mainly used to issue commands and combine data from different external devices into internal host tagnames. All graphic animations are handled via object configuration. There is a graphic scripting feature for those rare instances it is needed.

At runtime the HMI has several scripting engines active. All scripts are loaded at runtime start and are compiled to memory (graphic scripts are excluded). Any compile errors are logged in the "Event Log". Editing the scripts at runtime will not change the scripts in memory. You must select the reload button or stop and restart runtime to change the "in memory" scripts.

There are three scripting engines running.

The first engine handles commands from the onMouseDown and onMouseUp configurations for objects.

The second engine handles OnOpen, OnDuring, and OnClose for the runtime environment and user configured windows. Scripts are added to a queue. If the script is present in the queue and an attempt is made to add it again the attempt is ignored.

WARNING: Calling this script engine from another script or a mouse event and the called script causes a modal window to display, the processing of other scripts for this engine are paused until the called script is complete. The window OnDuring script is called once per second for each open window.

The third engine executes point scripts. It executes rapidly and continuously.

The graphic scripting engine is used as needed for graphics.

SCRIPT STORAGE

Scripts are stored in the path <project>\Scripts. All scripts for a project must be in this path. Scripts can be in subdirectories without limit on the structure.

Example:
<project>\Scripts --must be present
<project>\Scripts\Pump1
<project>\Scripts\Pump2
<project>\Scripts\Level 1\North
<project>\Scripts\Level 1\South

Scripts can be at the root level <project>\Scripts or any sub level.

When a script is selected in a configuration screen the relative path of the script selected is saved.

Point scripts and graphic scripts are stored in the point configuration and graphic element.

SCRIPT STRUCTURE

Script structure is made of two major blocks:
a) procedure and function declarations and
b) main block.

Both are optional.

There is no need for a main block to be inside begin..end. It could be a single statement. Some examples:

SCRIPT 1:

```
line of script 1
line of script ...
line of script n
```

SCRIPT 2:

```
OpenAWindow;
```

SCRIPT 3:

```
procedure DoSomething;
begin
 CallSomething;
end;

begin
 DoSomething;
end;
```

SCRIPT 4:

```
begin
 CallSomethingElse;
end;
```

SCRIPT 5:

```
function MyFunction;
 begin
  result:='Ok!';
 end;
```

SCRIPT 6:

```
CallSomethingElse;
```

SCRIPT 7:

```
values:=ReadValue(['tag1',5000,'tag2',5000]);
result:=values[0] + values[1];
```

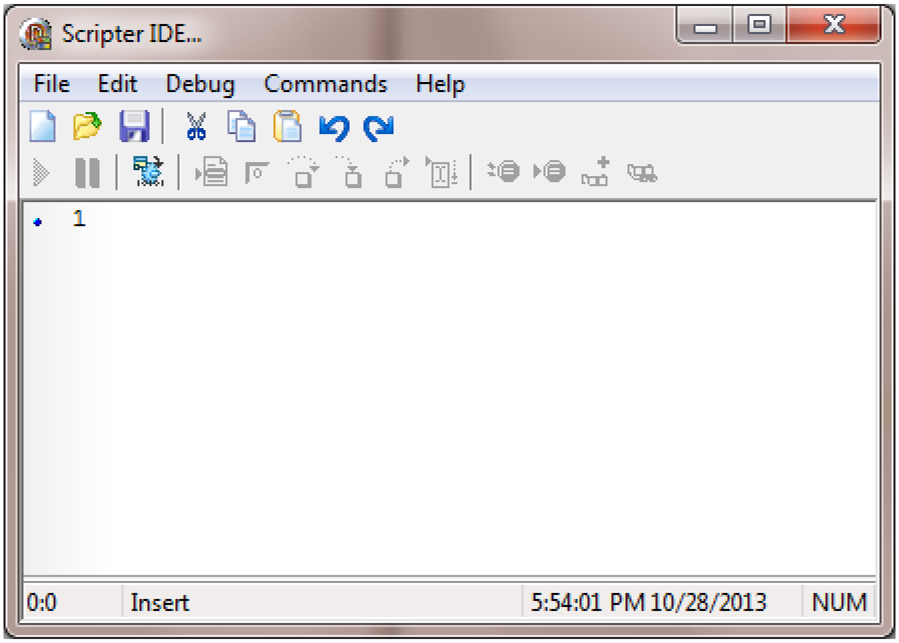
A "result" in the main block is <u>only</u> used in point scripts.

Like in Pascal, statements should be terminated by ";" character. Begin..end blocks are allowed to group statements.

SCRIPTING IDE

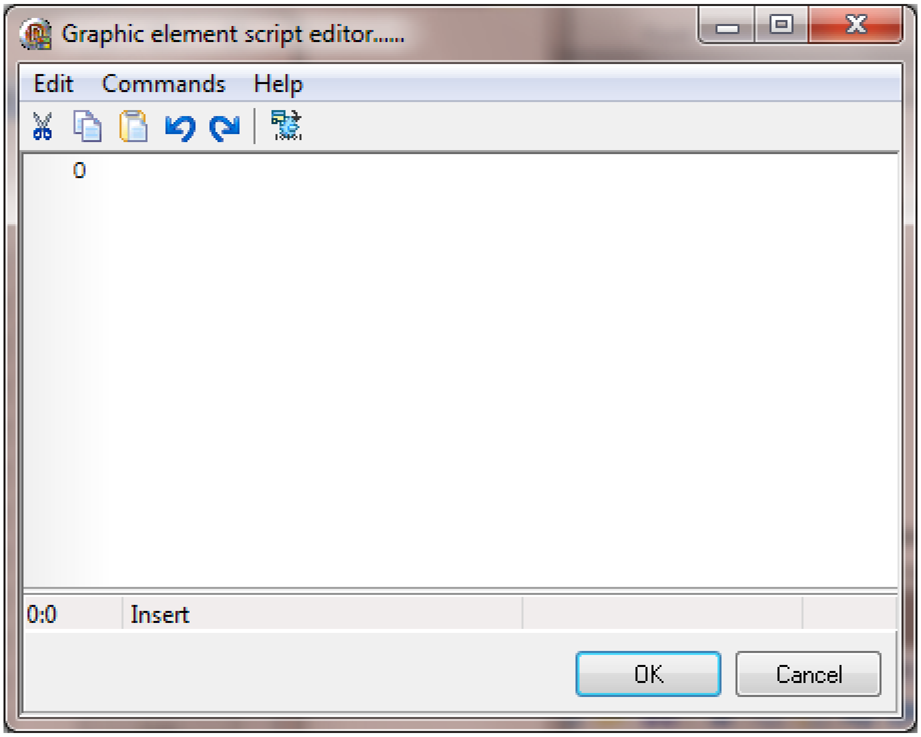
The HMI has one IDE (Integrated development environment) configured differently depending on the type of script opened and if it is at design time or runtime.

This is the full IDE when the script is regular script. The other types of scripts are point scripts and graphic scripts. If you move the mouse over each icon a tooltip will appear naming the icon.


Scripter IDE...
File
Edit
Debug
Commands
Help
1
0:0
Insert
5:54:01 PM 10/28/2013
NUM

The “points” looks like the one above but has fewer commands under the command window, among other slight differences.

This is the IDE when the script is a graphic element. Compared to the one above it has few icons and when accessing commands it has fewer commands. It also has some features that are only for graphic scripts.


Graphic element script editor......
Edit
Commands
Help
0
0:0
Insert
OK
Cancel

Point and full scripts can be edited and debugged at runtime. Graphic scripts cannot be edited or debugged at runtime but, it is normally not needed. The script can be changed, the window closed, reopened and the edited script will run.

SCRIPT GLOBALS

Script globals are storage locations for script variables.

Some of the possible uses of a script variable:

1. Need to be referenced in more than one script.
2. Do not need the monitoring functions of host tags.
3. Script globals are retentive between executions of a script.
4. Script globals are retentive between executions of runtime. (If Runtime is stopped via the "Quit" command.)
5. Save the result of a GetString- call.
6. Save the result of an ODBC read command.
7. Source of data for an ODBC write command.

Script globals should not be used to replace local variables that do not need any of the attributes listed.

The section name and item name are case sensitive.

Script globals can contain a string.

Script globals are referenced with a section and item pair. The section names must all be unique. The item names within a section must be unique.

Example:

Pump 1
 StartedCount

Pump 2
 StartedCount

Pump 3
 StartedCount

SCRIPT TIMERS

These timers can be used to execute scripts after a set time has elapsed or the timer fields can be monitored in running scripts and some action taken based on the timer state.

The time base is seconds.

The preset and accumulator limit:
2,147,483,647 seconds = 35,791,394 minutes = 596,523 hours = 24,855 days = 68 years

Timer Fields

Name	Type	Description
TT	Boolean	Timer enabled and not done. (Timer timing)
DN	Boolean	Timer enabled and accumulator >= preset. (Timer done)
EN	Boolean	Timer enabled
ACC	Integer	Accumulator
PRE	Integer	Preset
ARS	Boolean	Timer Auto Restart

AutoRestart

When enabled, when the timer is timed out (ACC is greater than/equal to the PRE) the timer begins timing again. The done field is never set true.

Script

A script to execute when the timer times out. (optional)

Description

A user field to store information about the timer. (optional)

Timer operation

When the enabled field (EN) becomes true:

1. The timer begins timing
2. The timer timing (TT) field is set true.
3. The accumulator (ACC) begins incrementing.

When the ACC is greater than/equal to the preset (PRE):

1. The DN field is set true.
2. The TT is set false.
3. The ACC stop incrementing.

When the enabled field (EN) becomes false:

1. The ACC is set to zero.
2. The DN is set false.
2. The TT is set false.

SCRIPT FUNCTIONS

This is the main list of script functions. There are more listed at the end that are not covered. They are rarely used and if help is needed contact support.

These are the HMI specific functions. The functions are listed in alphabetical order. Each one is covered below.

AcknowledgeCommand
Add
AddDigital
AllTrue
AnyTrue
Average
Beep
CameraSaveLoop
CaptureScreen
CaptureWindow
ClearPortCounters
CloseAlarmLogWindow
CloseAlarmWindow
CloseAllUserWindows
CloseEventWindow
ClosePortDiagnosticWindow
CloseTagMonitorWindow
CloseWindow
DigitalCompare
DMCPOpenPlotWindow
DMCPSavePlotPictureToFile
EmailSendMessage
EmailUserSendMessage
ExecuteReport
ExecuteScript
ExportAlarmLog
ExportEventLog
ForceLogOn
FTPGetSetting
FTPSetSetting
GetAlarmGroupCount
GetPortCounters
GetSystemVariable
GetUserInputBoolean
GetUserInputBoolean2
GetUserInputBoolean4
GetUserInputDate
GetUserInputFloat
GetUserInputInteger
GetUserInputString
GetUserInputStringMask
GlobalGet
GlobalSet
IsUserWindowOpen
LaunchApplication
LoadRecipe
LogEvent
LogOn
LogOff
MousePosition
ODBCAddToInList
ODBCAddToOutList
ODBCClearInList
ODBCClearOutList
ODBCIssueRead
ODBCIssueWrite
ODBCDatalogger
ODBCDataloggerPause
ODBCDataloggerSetRefresh
ODBCSetTableName
OmniRetrieveReport
OmniViewReport
OpenAlarmLogWindow
OpenAlarmWindow
OpenBrowserWindow
OpenDriveStatusWindow
OpenEventWindow
OpenPortDiagnosticWindow
OpenTagMonitorWindow
OpenWindow
OpenWindowEx
OpenWindowUserSelect
PlaySound
PlaySound2
PrintScreen
PrintScreenActiveWindow
ReadValue
ReloadRecipeSheet
ReportSetCell
ReportSetCellColor
Result
SchedulerOpenMonitorWindow
SchedulerSetParameter
SchedulerSetState
SendKeys
SetAlarmEnables
SetMAStationConfigurationName
SetNotificationUserEmailAddress
SetNotificationUserSMSNumber
SetPortReadEnable
SetTaskState
SetTrendPen
SetTrendPenMini
SetWindowColor
SetWindowDate
SilenceAcknowledgeCommand
SilenceCommand
SMSSendMessage
SMSUserSendMessage
StartCameraRecording
StopCameraRecording
StringGet
StringSet
TimerGet
TimerSet
TrendAddBand
TrendAddLimit
TrendRemoveLimits
TrendSavePlotPictureToFile
Valve2Input
WriteMultiple
WriteValue
WriteValuePulse

AcknowledgeCommand

Perform an "Acknowledge" command.

Inputs

Variable	Type	Description
None		

Outputs

Variable	Type	Description
None		

Example

AcknowledgeCommand;

Related:
SilenceCommand
SilenceAcknowledgeCommand

Add

This function is used to add all the input values.

Inputs

Variable	**Type**	**Description**
UseQuality	Boolean	Use or ignore the quality state of the tagname
Tagname	String	Name of the tag
Item Number	Integer	Data item ID

Outputs

Variable	**Type**	**Description**
Value	Float	The inputs are added.

If UseQuality is true and the quality of the tagname is good the value of the item id will be used in the calculation of the function.

If UseQuality is false the value of the item id will be used in the calculation of the function regardless of the quality of the tagname.

Examples

```
value:=Add(true,['tagname 1', 5000, 'tagname 2', 5000]);
```

Related:

AddDigital
AllTrue
AnyTrue
Average

AddDigital

This function returns the count of true or false inputs.

Inputs

Variable	**Type**	**Description**
CheckTrue	Boolean	True = Count the number of true inputs False = Count the number of false inputs
UseQuality	Boolean	Use or ignore the quality state of the tagname
Tagname	String	Name of the tag
Item Number	Integer	Data item ID

Outputs

Variable	**Type**	**Description**
Value	Integer	The count of true or false tagnames.

If UseQuality is true and the quality of the tagname is good the value of the item id will be used in the calculation of the function.

If UseQuality is false the value of the item id will be used in the calculation of the function regardless of the quality of the tagname.

Examples

```
//the number of false inputs
value:=AddDigital(false, true,['tagname 1', 5007, 'tagname 2', 5007]);

//the number of true inputs
value:=AddDigital(true, true,['tagname 1', 5007, 'tagname 2', 5007]);
```

Related:

Add
AllTrue
AnyTrue
Average

AllTrue

This function is used to evaluate if all the referenced digital items are true. (AND function)

Inputs

Variable	**Type**	**Description**
UseQuality	Boolean	Use or ignore the quality state of the tagname
Tagname	String	Name of the tag
Item Number	Integer	Data item ID

Outputs

Variable	**Type**	**Description**
Value	Boolean	True = All data values are true False = At least one data value was not true (false)

If UseQuality is true and the quality of the tagname is good the value of the item id will be used in the calculation of the function.

If UseQuality is false the value of the item id will be used in the calculation of the function regardless of the quality of the tagname.

Examples

```
value:=AllTrue(true,['tagname 1', 5007, 'tagname 2', 5007]);

if value then
;
```

Adding a "not" changes the result to - any false (NAND function)

```
value:=not AllTrue(true,['tagname 1', 5007, 'tagname 2', 5007]);

if value then
;
```

Related:
Add
AddDigital
AnyTrue
Average
DigitalCompare

AnyTrue

This function is used to evaluate if any of the referenced digital items are true. (OR function)

Inputs

Variable	**Type**	**Description**
UseQuality	Boolean	Use or ignore the quality state of the tagname
Tagname	String	Name of the tag
Item Number	Integer	Data item ID

Outputs

Variable	**Type**	**Description**
Value	Boolean	True = Any data value is true False = All data values are false

If UseQuality is true and the quality of the tagname is good the value of the item id will be used in the calculation of the function.

If UseQuality is false the value of the item id will be used in the calculation of the function regardless of the quality of the tagname.

Examples

```
value:=AnyTrue(true,['tagname 1', 5007, 'tagname 2', 5007]);

if value then
;
```

Adding a "not" changes the result to - all false (NOR function)

```
value:=not AnyTrue(true,['tagname 1', 5007, 'tagname 2', 5007]);

if value then
;
```

Related:

Add
AddDigital
AllTrue
Average
DigitalCompare

Average

This function is used to calculate an average.

Inputs

Variable	**Type**	**Description**
UseQuality	Boolean	Use or ignore the quality state of the tagname
Tagname	String	Name of the tag
Item Number	Integer	Data item ID

Outputs

Variable	**Type**	**Description**
Value	Float	The inputs are added and value is divided by the number of inputs

If UseQuality is true and the quality of the tagname is good the value of the item id will be used in the calculation of the function.

If UseQuality is false the value of the item id will be used in the calculation of the function regardless of the quality of the tagname.

Examples

value:=Average(true,['tagname 1', 5000, 'tagname 2', 5000]);

Related:

Add

AddDigital

AllTrue

AnyTrue

Beep

The computer speaker will play the default "Windows beep" sound.

Inputs

Variable	Type	Description
None		

Outputs

Variable	Type	Description
None		

Example

```
Beep;
```

CameraSaveLoop

IP camera only

This function is used to save the current loop to disk.

Inputs

Variable	**Type**	**Description**
Camera Name	String	Name of camera

Outputs

Variable	**Type**	**Description**
None		

Example

CameraSaveLoop('IP_Camera_1');

Related:
StartCameraRecording
StopCameraRecording

CaptureScreen

This function is used to capture the screen to a file.

Inputs

Variable Type Description
Filename String The complete path and file name to save the screen capture. The extension 'jpg' or 'bmp' determines the file type.
DateTime Boolean Include the date and time at the bottom of the image.

Outputs

Variable Type Description
None

Example

CaptureScreen('C:\CapturedScreen.jpg', true);
CaptureScreen('C:\CapturedScreen.bmp', false);

Note:
1) If a file with the same name exist it will be replaced with the new capture.
2) If the path does not exist the capture will fail.
3) If the computer has more than one monitor the file name for each monitor will be prefixed with a number and underscore.

Related:
CaptureWindow
PrintScreen
PrintScreenActiveWindow

CaptureWindow

This function is used to capture a user window or foreground window to a file.

Inputs

Variable	Type	Description
Filename	String	The complete path and file name to save the screen capture. The extension 'jpg' or 'bmp' determines the file type.
WindowName	String	The name of the user window. If the string is blank the foreground window will be captured
DateTime	Boolean	Include the date and time at the bottom of the image.

Outputs

Variable	Type	Description
None		

Example

```
CaptureWindow('C:\CapturedForeground.jpg', '', false);         //captures the foreground
                                                               //window to the JPEG file
CaptureWindow('C:\CapturedWindow.bmp', 'Main', true);          //captures the user window
                                                               //titled 'Main' to a bitmap file
```

Note:
1) If a file with the same name exist it will be replaced with the new capture.
2) If the path does not exist the capture will fail.
3) If a window name is supplied and the window is not open the capture will fail.

Related:
CaptureScreen
PrintScreen
PrintScreenActiveWindow

ClearPortCounters

Clear the counters/watchdog for a port.

Inputs

Variable	Type	Description
Port name	String	The name of the port.

Outputs

Variable	Type	Description
None		

Example

```
ClearPortCounters('Pump_Port_1');
```

Related:
GetPortCounters

CloseAlarmLogWindow

Close the alarm log window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

CloseAlarmLogWindow;

Related:
OpenAlarmLogWindow

CloseAlarmWindow

Close the alarm window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

CloseAlarmWindow;

Related:
OpenAlarmWindow

CloseAllUserWindows

Close all the user created windows.

Inputs

Variable	Type	Description
None		

Outputs

Variable	Type	Description
None		

Example

CloseAllUserWindows;

Related:
OpenWindow
CloseWindow

CloseEventWindow

Close the event log window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

CloseEventWindow;

Related:
LogEvent
OpenEventWindow

ClosePortDiagnosticWindow

This function is used to close a window monitoring a ports data.

Inputs

Variable	**Type**	**Description**
Port name	String	Name of the port to monitor

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window closed False if the window did not close

Example

```
value:=ClosePortDiagnosticWindow('MODBUS PORT 1');
if value then
begin
//window closed
end;

if ClosePortDiagnosticWindow('MODBUS PORT 1') then
begin
//window closed
end;
```

Related:
OpenPortDiagnosticWindow

CloseTagMonitorWindow

This function is used to close a window used for monitoring a tag (point).

Inputs

Variable	Type	Description
Tagname	String	Name of the tag

Outputs

Variable	Type	Description
Value	Boolean	True if the window closed False if the window did not close

Example

```
value:=CloseTagMonitorWindow('GreenInkFlow2B');
if value then
begin
//window closed
end;

if CloseTagMonitorWindow ('GreenInkFlow2B') then
begin
//window closed
end;
```

Related:
OpenTagMonitorWindow

CloseWindow

This function is used to close a user created window by name. If the logged on user does not have access rights to the window it will not close and the function will return false.

Inputs

Variable	**Type**	**Description**
Window Name	String	Name of window to close

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window opened False if the window did not close

Example

```
value:=CloseWindow('Pump Station 9');
if value then
begin
//window closed
end;

if CloseWindow('Pump Station 9') then
begin
//window closed
end;
```

Related:
CloseAllUserWindows
IsUserWindowOpen
OpenWindow
OpenWindowUserSelect

DigitalCompare

This function is used to evaluate the first Boolean that is true from 1 or more tagnames.

Inputs

Variable	**Type**	**Description**
UseQuality	Boolean	Use or ignore the quality state of the tagname
DefaultValue	Integer	The value returned if all inputs are false
Tagname	String	Name of the tag
Item Number	Integer	Data item ID

Outputs

Variable	**Type**	**Description**
Value	Integer	The index of the first true, 0 if a tag has bad quality or the default value.

If UseQuality is true and the quality of any tagname is bad 0 will be returned.

If UseQuality is false the index of the first true Boolean or the default value will be returned.

Examples

value:=DigitalCompare(true,999,['tagname 1', 5007, 'tagname 2', 5007]);

case value of
0: bad quality
1: tagname 1 true
2: tagname 2 true
999: all Booleans false
end;

Related:
Add
AddDigital
AllTrue
AnyTrue
Average

DMCPOpenPlotWindow

This function is used to display a plot from a DMCP port.

Inputs

Variable	**Type**	**Description**
Port name	String	The name of the port.
Theme name	String	The name of the theme. If blank the default theme will be used.
Plot number (0-7)	Integer	The plot to display when the window opens.
Collect on open	Boolean	If true a command to collect the plot from the controller will be executed when the window is opened. If false the trend will be blank or populated with a previously collected plot.

Outputs

Variable	**Type**	**Description**
None		

Notes:
1. Only one plot window per port will be open. If this command is called with a window open for the port, the window will be set to the front window.
2. If the port is configured to use TCP this note in the RMC tools help file is relevant:
Avoid repeatedly closing and re-opening TCP connections. Devices are required to maintain state on TCP connections for two minutes after the connections are closed, and repeatedly opening and closing TCP connections can exhaust resources in the RMC or host device. Instead the connection should be left open by the host device while communicating with the RMC.
The port will use one TCP port for normal data communications and when this window is open another TCP port is opened and used for plot collections and when the window is closed the TCP port is released. Opening and closing this plot window could cause the problem stated in the note above.

Example

```
DMCPOpenPlotWindow('Controller 1', '', 0, true);
DMCPOpenPlotWindow('Controller 99', 'Packer theme', 1, false);
```

DMCPSavePlotPictureToFile

This function is used to capture the currently displayed plot to a file.

Inputs

Variable	**Type**	**Description**
Port name	String	The name of the port. If the port plot window is not open, the command is terminated.
Path	String	The complete path and file name. The file extension selects the file type.
Width	Integer	The width of the image.
Height	Integer	The height of the image.

Outputs

Variable	**Type**	**Description**
None		

<u>File type Extension</u>

Bitmap	BMP
JPEG	JPG
PNG	PNG
Metafile	EMF

Note:
1. If a file with the same name/path exist it will be overwritten.

Example

```
DMCPSavePlotPictureToFile('Controller 1', 'C:\test.bmp',1024,768);
DMCPSavePlotPictureToFile('Controller 1', 'C:\test.jpg',1024,768);
DMCPSavePlotPictureToFile('Controller 1', 'C:\test.png',1024,768);
DMCPSavePlotPictureToFile('Controller 1', 'C:\test.emf',1024,768);
```

EmailSendMessage

This function is used to send an Email message without user input.

Note: The user names are configured in the Notification - Emaill settings.

Inputs

Variable	**Type**	**Description**
UserName	String	Email user name(s), At least one user name must be present.
Attachments	String	Files to attach to the message.
InMessage	String	The message to send. It can be blank if the subject is not blank.
InSubject	String	The message subject to send. It can be blank if the message is not blank.
ZipFilename	String	If the 'Attachments' above is not blank and a file name is supplied the attachments will be zipped and the compressed file will be sent in place of the attachments. Do not include a path, just a file name.

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the message was queued False if the message was not queued

Example

```
value:=EmailUserSendMessage( ['Joe Smith', 'Bob Jones'], //users to receive email
                             ['C:\ScreenPrint.bmp', 'C:\AlarmLog.csv'], //files to attach
                             'Alarm capture', //message
                             'Fan failure', //subject field
                             ['AlarmCapture']); //zip the attachments and the the zip file
                             name is 'AlarmCapture'

value:=EmailUserSendMessage( ['Bob Jones'], //user to receive email
                             [], //no files to attach
                             '', //message is blank
                             'Fan failure', //subject field
                             ['']); //no zip
```

Related:
EmailUserSendMessage

EmailUserSendMessage

This function is used to send an Email message with user input.

Note: The user names are configured in the Notification - Emaill settings.

Inputs

Variable	Type	Description
UserName	String	Email user name(s), if blank all configured Email user names are used.
Attachments	String	Files to attach to the message.
CanChange	Boolean	The user can select from the list of user names.
CanEdit	Boolean	The user can edit the message/subject before sending.
ShowKeyboard	Boolean	If enabled, an on screen keyboard is displayed with the window.
InMessage	String	The message to send. It can be blank and the user will enter the text.
InSubject	String	The message subject to send. It can be blank and the user will enter the text.
LeftPos	Integer	Horizontal position of the window.
TopPos	Integer	Vertical position of the window. LeftPos and TopPos refer to the left and top corner of the window. If both values are -1 the window is centered on the main monitor.
ZipFilename	String	If the 'Attachments' above is not blank and a file name is supplied the attachments will be zipped and the compressed file will be sent in place of the attachments. Do not include a path, just a file name.

Outputs

Variable	Type	Description
Value	Boolean	True if the message was queued False if the message was not queued

Example

```
value:=EmailUserSendMessage( ['Joe Smith', 'Bob Jones'],   //users to receive email
 ['C:\ScreenPrint.bmp',
 'C:\AlarmLog.csv'],                    //files to attach
True,                                   //user can change users
True,                                   //user can change message/subject
True,                                   //show the on screen keyboard
'',                                     //message is blank, user must enter
'Fan failure',                          //subject field
-1,                                     //left edge of window
-1,                                 //top edge of window
['AlarmCapture']);                  //zip the attachments

value:=EmailUserSendMessage( [],                              //display all users
[],                                                          //no files to attach
True,                               //user can change users
True,                               //user can change message/subject
True,                               //show the on screen keyboard
'',                                 //message is blank, user must enter
'Fan failure',                      //subject field
-1,                                 //left edge of window
-1,                                 //top edge of window
['']);                              //no zip
```

Related:
EmailSendMessage

ExecuteReport

This function is used to execute the named report.

Inputs

Variable	**Type**	**Description**
Report name	String	Name of report to execute

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the report executed False if the report did not execute

Note: The report engine can return true and the report contain errors. For example: A point.item does not exist. The report will execute, place 'Error' in any cell that does not resolve and return true.

Example

```
value:=ExecuteReport('Pump A');
if value then
begin
//the report executed
end;
```

ExecuteScript

This function is used to execute a script. The script is placed in the queue of the engine specified.

Inputs

Variable	**Type**	**Description**
Script Name	String	Name of the script to execute and the file extenstion (.psc)
Engine Number	Integer	1 = Commands Engine 2 = During Engine

Outputs

Variable	**Type**	**Description**
Value	Boolean	The script was queued.

If the engine number is not 1 or 2 the script is not queued and result is set to true.
If the script is already in the queue it will not be added again and the result will be true.

Example

```
value:=ExecuteScript('Start Three Pumps (ABC).psc', 1);
if value then
begin
// the script was queued.
end;

if ExecuteScript('Start Three Pumps (ABC).psc' ,2) then
begin
// the script was queued.
end;
```

Related:
Script Structure

ExportAlarmLog

This function is used export an alarm log from the internal HMI format to a comma separated file (CSV).

Inputs

Variable	Type	Description
Command	Integer	0 = Yesterday's log 1 = Today's log 2 = Use month/day/year field
Month	Integer	Month
Day	Integer	Day
Year	Integer	Year
Destination	String	Destination path. If the path does not exist the export will fail.
Filename	String	If blank, the file name is the same as the log file name except the extension is 'csv'. If not blank, the filename will be used. Any invalid file name characters will cause the export to fail.

Outputs

Variable	Type	Description
Result	Boolean	True if the export completed False if the export failed

Examples

result:=ExportAlarmLog(0,0,0,0,'C:\ExportedLogs\Alarms',''); //exports yesterday's alarm log, the '' are two single quotes
result:=ExportAlarmLog(1,0,0,0,'C:\ExportedLogs\Alarms',''); //exports today's alarm log
result:=ExportAlarmLog(2,3,4,2013,'C:\ExportedLogs\Alarms','SomeName.csv'); //exports the alarm log for March 4, 2013, SomeName.csv is the file name

Notes:
1) If a file exist in the destination path with the same file name, the file will be replaced.
2) If the alarm log does not exist the result will be false.
3) The month, day and year field are ignored if the command is 0 or 1.
4) **WARNING** Depending on the number of entries in the log this command can use a large amount of CPU resources. Contact support if help is needed.

Related:
ExportEventLog

ExportEventLog

This function is used export an event log from the internal HMI format to a comma separated file (CSV).

Inputs

Variable	Type	Description
Command	Integer	0 = Yesterday's log 1 = Today's log 2 = Use month/day/year field
Month	Integer	Month
Day	Integer	Day
Year	Integer	Year
Destination	String	Destination path. If the path does not exist the export will fail.
Filename	String	If blank, the file name is the same as the log file name except the extension is 'csv'. If not blank, the filename will be used. Any invalid file name characters will cause the export to fail.

Outputs

Variable	Type	Description
Result	Boolean	True if the export completed False if the export failed

Examples

result:=ExportEventLog(0,0,0,0,'C:\ExportedLogs\Events',''); //exports yesterday's event log, the '' are two single quotes
result:=ExportEventLog(1,0,0,0,'C:\ExportedLogs\Events',''); //exports today's event log
result:=ExportEventLog(2,3,4,2013,'C:\ExportedLogs\Events','SomeName.csv'); //exports the event log for March 4, 2013, SomeName.csv is the filename

Notes:
1) If a file exist in the destination path with the same file name, the file will be replaced.
2) If the event log does not exist the result will be false.
3) The month, day and year field are ignored if the command is 0 or 1.
4) **WARNING** Depending on the number of entries in the log this command can use a large amount of CPU resources. Contact support if help is needed.

Related:
ExportAlarmLog

ForceLogOn

This command will force a user to be "logged on". The 'Allow forced logon' for the user must be enabled for this command to succeed. The 'Director' cannot be forced.

Inputs

Variable	**Type**	**Description**
User name	String	Exact user name, case sensitive

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if successful False if failed

Example

```
value:=ForceLogOn('Operator');
if value then
begin
//a user is logged on
end;

if ForceLogOn('Operator') then
begin
//a user is logged on
end;
```

FTPGetSetting

This function is used to read a FTP setting from a port. It would mainly be used in scripting for control of the setting but, could be used to display a setting in a window at runtime.

Inputs

Variable	Type	Description
Port name	String	Port name
Setting	String	Setting name

Outputs

Variable	Type	Description
Value	String	String value

The "Setting" is the same string as is shown in the port configuration dialog. Refer to the FTP settings for a description of each attribute. The settings strings are:

Server path
User password
Source path
Destination file name
Include subdirectories
Binary mode
Server port
Destination path
Compress
Logging
User name
Local port
Compress password
Days Timeout
Passive mode

State - used to start or cancel the transfer

The result is a string.

If the result needs to be displayed in a window, save the string in a global, GlobalSet, and use Script Global animation

Examples

```
value:=FTPGetSetting('MainOffice','Days');
```

Related:
FTPSetSetting

FTPSetSetting

This function is used to write a setting in an FTP port.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name
Setting	String	Setting name
Value	String	The new value for the setting

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if setting/value was accepted False if setting/value was not accepted

See FTPGetSetting for a list of "setting" names.

To initiate a transfer use the word "State" in the setting field and set the value to "True".

```
value:=FTPSetSetting('MainOffice','State','True');
```

To cancel a transfer use the word "State" in the setting field and set the value to "False".

```
value:=FTPSetSetting('MainOffice','State','False');
```

Notes:

1. The result returns true if the setting name exists and the value is not blank. The check for a valid setting value is not performed until the object is commanded to initiate the transfer.
2. When using the "State" setting and the value is "True" the result is "True" if the FTP object is created and the transfer started. If the transfer is in progress the result is "False".
3. When using the "State" setting and the value is "False" the result is "True" if the FTP object is created and the object is commanded to cancel. If the transfer is not in progress the result is "False". If the object is commanded to cancel it might take several moments for the object to stop, close the connection and clean up the transfer.
4. The case must match in all fields. The port and setting. For the value, true and false it must be "True" or "False".

Examples

```
value:=FTPSetSetting('MainOffice','Days','-3');
value:=FTPSetSetting('MainOffice','Logging,'False');
if FTPSetSetting('MainOffice','Days','-3') then
;
```

Related:

FTPGetSetting

GetAlarmGroupCount

This function is used to get the number of active alarms in an alarm group.

Inputs

Variable	Type	Description
Group number	Integer	Alarm group number

Outputs

Variable	Type	Description
Count	Integer	The number of active alarms in the group. -1 if the group does not exist

Examples

```
value:=GetAlarmGroupCount(2);
if (value > 0) then //if greater than 0, at least one alarm in the group is active
beep;
```

GetPortCounters

This function returns port diagnostic information.

Inputs

Variable	Type	Description
Port name	String	The name of the port

Outputs

Variable	Type	Description
Values	Array of integer	See below

Primary port

Values[0] Integer 0 = watchdog not timed out, 1 = watchdog timed out
Values[1] Integer Watchdog timed out counter.
Values[2] Integer Reads requested
Values[3] Integer Reads completed
Values[4] Integer Writes requested
Values[5] Integer Writes completed
Values[6] Integer N/A
Values[7] Integer N/A
Values[8] Integer N/A
Values[9] Integer N/A

Secondary port

Values[10] Integer 0 = watchdog not timed out, 1 = watchdog timed out
Values[11] Integer Watchdog timed out counter.
Values[12] Integer Reads requested
Values[13] Integer Reads completed
Values[14] Integer Writes requested
Values[15] Integer Writes completed
Values[16] Integer N/A
Values[17] Integer N/A
Values[18] Integer N/A
Values[19] Integer N/A

Example

```
values:=GetPortCounters('Pump_Port_1');
if (values[0] <> 0) then
begin

//the primary port watchdog timed out flag is true
```

Note:
1) Not all port types/port configurations have all fields.

2) The watchdog timed out flag does not automatically clear. If must be cleared via script command, mouse command or the 'Port Diagnostics' window.

Related:
ClearPortCounters

GetSystemVariable

This function is used to read a system value.

Inputs

Variable	Type	Description
Item Number	Integer	Data item ID

Outputs

Variable	Type	Description
Values	Array of variant	Values of variables

Item	Number Description
1	Current time
2	Current date
3	Active alarm count
4	Day of week
5	User level
6	Program path
7	Project name
8	Common application data directory
9	Sounds playing
10	Alarm pulse
11	Logged on user name
12	Notification email status
13	Notification SMS status
14	Computer name
15	Computer IP address

Current time

The time is returned in 3 values.

values:=GetSystemVariable(1);

values[0] = hour 0..23
values[1] = minutes 0..59
values[2] = seconds 0..59

Current date

The date is returned in 3 values.

values:=GetSystemVariable(2);

values[0] = day 1..31
values[1] = month 1..12
values[2] = year 1..9999

Active alarm count

The count is returned in 1 value.

values:=GetSystemVariable(3);

values[0] = number of active alarms 0...n

Day of week

The value is returned in 1 value.

values:=GetSystemVariable(4);

values[0] = The day of the week. (1..7)

1=Sunday 2=Monday...

User level

The logged on user level. If a user is not logged on the return value is -1.

values:=GetSystemVariable(5);

values[0] = 0 - 65535 logged on user level
values[0] = -1 a user is not logged on

Program path

This returns the path of the runtime program.

values:=GetSystemVariable(6);

values[0] = 'C:\Program Files\Everest' //example

Project name

This returns the name of the current project.

values:=GetSystemVariable(7);

values[0] = 'Station 3' //example

Common application data directory

This returns the 'Common Application Data Directory' path for the runtime program. The OS determines the directory path.

```
values:=GetSystemVariable(8);
```

```
values[0] = 'C:\ProgramData\<Application name>\' //example Windows 7
```

Sounds playing

This returns the number of sounds queued to play.

```
values:=GetSystemVariable(9);
```

```
values[0] = 1 //one sound is in the queue
```

Alarm pulse

When a new alarm condition becomes true an internal flag is set and remains set until an 'Acknowledge' command is issued. The flag will be set true on each new alarm condition.

```
values:=GetSystemVariable(10);
```

values[0] = 1 //an alarm condition became true
values[0] = 0 //an alarm condition became true and was acknowledged or an alarm condition has not become true.

Logged on user name

The logged on user name. If a user is not logged on the return value is '' (empty).

```
values:=GetSystemVariable(11);
if (values[0] = 'Ray') then
beep;
```

or to ignore case:

```
if (UpperCase(values[0]) = UpperCase('Ray')) then
beep;
```

Notification email status

This holds the last action/status for the email logic of the notification logic. The value can change very quickly and does not change until another step is performed.

Value Description

0 No Action (no action has been performed)
1 Email sent
2 Send complete
5 SMPT open command

These only apply to messages that do not require an acknowledgment.
3 Send success
4 Send failure

Errors
-1 SMTP abort from not ready after 10 seconds
-2 POP3Checking abort from not ready after 10 seconds

Notification SMS status

This holds the last action/status for the SMS logic of the notification logic. The value can change very quickly and does not change until another step is performed.

Value Description
0 No Action (no action has been performed)
1 SMS sent
2 Initialization complete
5 Message read complete (Only applies when acknowledgement is required)

These only apply to messages that do not require an acknowledgment.
3 Send success
4 Send failure

Errors
-1 Watchdog timeout

Computer name

This returns the name of the computer.

```
values:=GetSystemVariable(14);

if (values[0] = 'Operations 101') then
beep;
```

or to ignore case:

```
if (UpperCase(values[0]) = UpperCase('Operations 101')) then
beep;
```

Note: If the intent is to display the computer name or computer IP address on a graphic screen, the most efficient method is to populate a script global when monitoring starts or when the graphic screen is opened. Reading these two values in a script that executes over and over (graphic script for example) is not efficient.

Computer IP address

This returns all the IP addresses of the computer

```
values:=GetSystemVariable(15);
```

values[0] contains the count of IP addresses.
values[1] through values[n] contains the IP address as a string.

```
//example
values[0] = 2 //number of IP addresses returned
values[1] = '192.168.1.1' //address 1
values[2] = '10.0.0.5' //address 2
```

In the scripting examples is an example of how to collect and store all the IP addresses for the computer.

GetUserInputBoolean

This function is used to allow the user to select one of three buttons.

Inputs

Variable	Type	Description
Prompt	String	User prompt
Top Button	String	Text in top button
Middle Button	String	Text in middle button
Bottom Button	String	Text in bottom button

Outputs

Variable	Type	Description
Value	Integer	The value of the button selected 1 = Top button 2 = Middle Button 3 = Bottom

If the user closes the window without making a selection, the value 3 is returned. The buttons will wrap the text as needed.

Example

```
value:=GetUserInputBoolean('Start/Stop Pump...', 'Start', 'Stop', 'Cancel');

case value of
1: place start pump command; //top button
2: place stop pump command; //middle button
3: nothing; //bottom button
end;
```

OR

```
if value = 1 then
place start pump code
else if value = 2 then
place stop pump code
```

Related:
GetUserInputBoolean2
GetUserInputBoolean4
GetUserInputInteger
GetUserInputFloat

GetUserInputBoolean2

This function is used to allow the user to select one of two buttons.

Inputs

Variable	**Type**	**Description**
Prompt	String	User prompt
Top Button	String	Text in top button
Bottom Button	String	Text in bottom button

Outputs

Variable	**Type**	**Description**
Value	Integer	The value of the button selected 1 = Top button 2 = Bottom button

If the user closes the window without making a selection, the value 2 is returned.
The buttons will wrap the text as needed.

Example

```
value:=GetUserInputBoolean2('Start/Stop Pump…', 'Start', 'Stop', 'Cancel');

case value of
1: place start pump command; //top button
2: place stop pump command; //bottom button
end;

OR

if value = 1 then
place start pump code
else if value = 2 then
place stop pump code
```

Related:
GetUserInputBoolean
GetUserInputBoolean4
GetUserInputInteger
GetUserInputFloat

GetUserInputBoolean4

This function is used to allow the user to select one of four buttons.

Inputs

Variable	**Type**	**Description**
Prompt	String	User prompt
Top Button	String	Text in top button
Middle Top Button	String	Text in middle top button
Middle Bottom Button	String	Text in middle bottom button
Bottom Button	String	Text in bottom button

Outputs

Variable	**Type**	**Description**
Value	Integer	The value of the button selected 1 = Top button 2 = Middle Top Button 3 = Middle Bottom Button 4 = Bottom

If the user closes the window without making a selection, the value 4 is returned.
The buttons will wrap the text as needed.

Example

```
value:=GetUserInputBoolean4('Start/Stop/Jog Pump…', 'Start', 'Stop', 'Jog', 'Cancel');

case value of
1: place start pump command; //top button
2: place stop pump command; //middle top button
3: place jog pump command; //middle bottom button
4: nothing; //bottom button
end;

OR

if value = 1 then
place start pump code
else if value = 2 then
place stop pump code
else if value = 3 then
place jog pump code
```

Related:

GetUserInputBoolean
GetUserInputBoolean2
GetUserInputInteger
GetUserInputFloat

GetUserInputDate

This function is used to allow the user to select a date.

Inputs

Variable	**Type**	**Description**
Prompt	String	A string to prompt the user for a date
Accept Button	String	Text in the "Accept" button
Cancel Button	String	Text in the "Cancel" button
Minus Days	Integer	The number of previous days allowed (0 - 32768)
Plus Days	Integer	The number of future days allowed (0 - 32768)

Outputs

Variable Type Description
Value[0] Integer Day
Value[1] Integer Month
Value[2] Integer Year

Minus Days
To limit the day selection to X days before the current day. For example, to allow the user to select any day prior to the day the function is called enter 32768 for this field. To limit the day selection to 7 days prior to the day the function is called enter 7 for this field.

Plus Days
To limit the day selection to X days after the current day. For example, to allow the user to select any day after the day the function is called enter 32768 for this field. To limit the day selection to 7 days after the day the function is called enter 7 for this field.

Example

```
//select a date in the last 89+ years and the next 89+ years
values:=GetUserInputDate('Select a date…', 'Accept', 'Cancel',32768 ,32768);
if values[0] <> 0 then
begin
//the OK button was selected
end;

//select today and the previous seven days
values:=GetUserInputDate('Select a date…', 'Accept', 'Cancel',7,0);
if values[0] <> 0 then
begin
//the OK button was selected
end;
```

Related:
SetWindowDate

GetUserInputFloat

This function is used to allow the user to enter a floating point value. The value the user enters is range checked when the user presses the accept button. If the value is not in range the window will not close.

Inputs

Variable	**Type**	**Description**
Prompt	String	A string to prompt the user for a value
Accept Button	String	Text in the "Accept" button
Cancel Button	String	Text in the "Cancel" button
Low Limit	Integer	The lowest value the user can enter
High Limit	Integer	The highest value the user can enter

Outputs

Variable	**Type Description**	
Value[0]	Boolean	True if the user pressed the accept button and the value is in range False if the user pressed the cancel button.
Value[1]	Float	The value the user entered.

Example

```
values:=GetUserInputFloat('Enter new setpoint…', 'Accept', 'Cancel',22.5,75.5);
if values[0] then
begin
WriteValue(['PumpAPressSetpoint',5000, values[1]]);
end;
```

Related:
GetUserInputInteger
GetUserInputBoolean
GetUserInputBoolean2
GetUserInputBoolean4

GetUserInputInteger

This function is used to allow the user to enter an integer value. The value the user enters is range checked when the user presses the accept button. If the value is not in range the window will not close.

Inputs

Variable	Type	Description
Prompt	String	A string to prompt the user for a value
Accept Button	String	Text in the "Accept" button
Cancel Button	String	Text in the "Cancel" button
Low Limit	Integer	The lowest value the user can enter
High Limit	Integer	The highest value the user can enter

Outputs

Variable	Type	Description
Value[0]	Boolean	True if the user pressed the accept button and the value is in range False if the user pressed the cancel button.
Value[1]	Integer	The value the user entered.

Example

```
values:=GetUserInputInteger('Enter new setpoint…', 'Accept', 'Cancel',0,100);
if values[0] then
begin
WriteValue(['PumpAPressSetpoint',5000, values[1]]);
end;
```

Related:
GetUserInputBoolean
GetUserInputBoolean2
GetUserInputBoolean4
GetUserInputFloat

GetUserInputString

This function is used to allow the user to enter a string.

Inputs

Variable	**Type**	**Description**
Prompt	String	A string to prompt the user for a value
Input	String	The string that will be placed in the edit field when the dialog is displayed (optional)
Accept Button	String	Text in the "Accept" button
Cancel Button	String	Text in the "Cancel" button
Virtual Keyboard	Boolean	If true the popup keyboard will be displayed
Maximum Length	Integer	Limits the length of the string (0 = unlimited)
Section	String	Section name (optional)
Item	String	Item name (optional)

Outputs

Variable	**Type**	**Description**
Values[0]	Boolean	True if the user pressed the accept button and the string is not empty False if the user pressed the cancel button.
Values[1]	String	The value the user entered.

The section and name refer to globals. If used, both fields must be valid.
If the user selected the cancel button value[1] will be empty.

Example

```
values:=GetUserInputString('Enter string…', '','Accept', 'Cancel',true,0,'','');
if values[0] then
LogEvent(values[1]);

value:=GlobalGet('Pmp1','Message');
values:=GetUserInputString('Enter string…', value, 'Accept',
'Cancel',false,64,'Pmp1','Message');
```

Related:
GetUserInputStringMask

GetUserInputStringMask

This function is used to allow the user to enter a string with an optional mask character. The input is limited to a single line of text. A common use for this would be to allow a user to enter a password without the password displayed in the text field.

Inputs

Variable	**Type**	**Description**
Prompt	String	A string to prompt the user for a value
Input	String	The string that will be placed in the edit field when the dialog is displayed (optional)
Accept Button	String	Text in the "Accept" button
Cancel Button	String	Text in the "Cancel" button
Virtual Keyboard	Boolean	If true the popup keyboard will be displayed
Maximum Length	Integer	Limits the length of the string (0 = unlimited)
Section	String	Section name (optional)
Item	String	Item name (optional)
Mask character	String	Character to display in edit field (if blank, the text will not be masked)

Outputs

Variable	**Type**	**Description**
Values[0]	Boolean	True if the user pressed the accept button and the string is not empty
False if the user pressed the cancel button.		
Values[1]	String	The value the user entered.

The section and name refer to globals. If used, both fields must be valid.
If the user selected the cancel button value[1] will be empty.

Example

```
values:=GetUserInputStringMask('Enter string…', ",'Accept', 'Cancel',true,0,",",'*');
if values[0] then
LogEvent(values[1]);

value:=GlobalGet('Pmp1','Message');
values:=GetUserInputStringMask('Enter string…', value, 'Accept',
'Cancel',false,64,'Pmp1','Message','*');
```

Related:
GetUserInputString

GlobalGet

This function is used to read the value of a script global.

Inputs

Variable	**Type**	**Description**
Section	String	Section name
Item	String	Item name

Outputs

Variable	**Type**	**Description**
Value	Variant	Value of requested section:item

If the <section:item> does not exist the result is '0'.

Example

```
value:=GlobalGet('Pump1','StartedCount');
```

Related:
Script Globals
GlobalSet

GlobalSet

This function is used to set the value of a script global.

Inputs

Variable	**Type**	**Description**
Section	String	Section name
Item	String	Item name
Value	Variant	New value

Outputs

Variable	**Type**	**Description**
Value	Boolean	Command was successful

Example

```
value:=GlobalSet('Pump1','StartedCount',34); //saves the value 34
value:=GlobalSet('ButtonActive',MainWindow','Stop Button'); //save the text string Stop Button
```

Related:
Script Globals
GlobalGet

IsUserWindowOpen

This function returns true if a user window with the input name is open.

Inputs

Variable	**Type**	**Description**
Window Name	String	Name of window to check if open

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window is open False if the window is not open or a window with the input name is not configured

Example

```
value:=IsUserWindowOpen('Pump Station 9');
if value then
begin
//window is open
end;

if IsUserWindowOpen('Pump Station 9') then
begin
//window is open
end;

if not IsUserWindowOpen('Pump Station 9') then
begin
OpenWindow('Pump Station 9'); //window is not opened or not configured, so issue open
command
end;
```

Related:
CloseWindow
OpenWindowEx
OpenWindowUserSelect

LaunchApplication

This function is used to launch an application, control panel or access a file with an application.

Inputs

Variable	Type	Description
File	String	The file, application or control panel to display
Operation	String	Action to be performed
Parameter[0]	String	Parameter passed to the application
Parameter[1]	String	Parameter passed to the application
Parameter[2]	String	Parameter passed to the application
Parameter[3]	String	Parameter passed to the application
Parameter[4]	String	Parameter passed to the application

Outputs

Variable	Type	Description
None		

File
The file variable will need to be the complete path if it references a file or application. Put a " at the beginning and the end of the string. If it is a control panel it does not need the full path.

Some application paths, e.g. MS Paint, Calculator, are known to MS Windows and the complete path is not required.

Operation

Edit	Launches an editor and opens the document for editing.
Open	Launches an application. If this file is not an executable file, its associated application is launched.
Print	Prints the document file.

Parameter[x] (optional)
Values that need to be passed to the application. If it is a string with spaces place a " at the beginning and end of the string.

Note: The quote symbols are double quotes. It is not two single quotes.
" quotation mark, or double quote
' apostrophe, or [single] quote

The scripting engine needs the single quote to delimit a string. For this function when passing a string it would need to be:
'" <some string> "' (no space between the quote-double quote and the double quote-quote)

quote double quote <some string> double quote quote

Examples

```
//Launch the calculator
LaunchApplication('calc.exe',open,[]);

//Launch MS paint
LaunchApplication('mspaint.exe',open,[]);

//Open a word document
LaunchApplication('"C:\Text files\Start pump instructions.doc"',edit,[]);
```

LoadRecipe

This function is used to command a recipe to write values to the destination points.

Inputs

Variable	**Type**	**Description**
Recipe name	String	Name of a recipe
Column	Integer	The column of the spreadsheet. 1 = A, 2 = B, etc.

Outputs

Variable Type Description

None

Examples

LoadRecipe('Butter Cookies', 2); //column B
LoadRecipe('Fuel mixture', 47); //column AU

Related:
ReloadRecipeSheet

LogEvent

Adds an entry to the event log file with the current time.

Inputs

Variable	**Type**	**Description**
Event String	String	String to add to event log file

Outputs

Variable	**Type**	**Description**
None		

Example

LogEvent('A text string');

The maximum string length is 100 characters.

Related:
CloseEventWindow
OpenEventWindow

LogOn

The "log on" dialog will appear.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if a user is logged on. False if a user is not logged on.

Example

```
value:=LogOn;
if value then
begin
//a user is logged on
end;

if LogOn then
begin
//a user is logged on
end;
```

Related:
LogOff
ForceLogOn

LogOff

This function logs off the current user. A dialog window will appear with two buttons.

Inputs

Variable	**Type**	**Description**
Prompt	String	Window Title
Accept Button	String	Accept Button Text
Cancel Button	String	Cancel Button Text
Silent	Boolean	If true the dialog window will not appear.

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the user was logged off or silent. False if the user was not logged off.

If a user is not logged on when this command is issue the command will return true without showing the dialog window.

```
value:=LogOff('Log off', 'Yes', 'No', false);
if value then
begin
//the user was logged off
end;

if LogOff('Log off', 'Yes', 'No',true) then
begin
//the user was logged off
end;
```

Related:
LogOn

MousePosition

This function is used to get the mouse pointer position.

Inputs

Variable	**Type**	**Description**
Local Client	Boolean	If false the mouse coordinates will be in global coordinates. If true the mouse coordinates will be in client coordinates.

Outputs

Variable	**Type**	**Description**
Position	Array of variant	[0] - horizontal position [1] - vertical position

Examples

```
pt:=MousePosition(false);
//returns the global position of the mouse pointer

pt:=MousePosition(true);
//returns the client position of the mouse pointer

pt:=MousePosition(false);
value:=OpenWindowEx('Pump Station 9',pt[0],pt[1],true);
//opens the window with center of the window at the mouse pointer

pt:=MousePosition(false);
value:=OpenWindowEx('Pump Station 9',pt[0],pt[1],false);
//opens the window with the left and top at the mouse pointer
```

Related:
OpenWindowEx

ODBCAddToInList

This function is used to add a read command to the 'in' list.

Inputs

Variable	Type	Description
Port name	String	Port name
List	Integer	0 = point list, 1 = script globals

List = 0 (point list)
Point name String Name of the point
Item number String Item number of the point to receive the data

List = 1 (script globals)
Section name String Script global section name
Item name String Script global item name receive the data

Column	String	Column (field) in the database table
Row	String	Row in the database table

Outputs

Variable	Type	Description
Value	Boolean	True if addition was accepted False if the addition was not accepted

Note: This function does not check for the presence of another command in the list with the same configuration.

Examples

value:=ODBCAddToInList('Recipe1',0,'Flour',5000);

value:=ODBCAddToInList('Recipe2',1,'Flour','PoundsNeeded');

Related:
ODBCAddToOutList
ODBCClearInList
ODBCIssueRead

ODBCAddToOutList

This function is used to add a write command to the 'out' list.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name
List	Integer	0 = point list, 1 = script globals

List = 0 (point list)
Point name String Name of the point
Item number String Item number of the point for data source

List = 1 (script globals)
Section name String Script global section name
Item name String Script global item name for data source

Column	String	Column (field) in the database table
Row	String	Row in the database table

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if addition was accepted False if the addition was not accepted

Note: This function does not check for the presence of another command in the list with the same configuration.

Examples

value:=ODBCAddToOutList('Recipe1',0,'Flour',5000);

value:=ODBCAddToOutList('Recipe2',1,'Flour','PoundsNeeded');

Related:
ODBCAddToInList
ODBCClearOutList
ODBCIssueWrite

ODBCClearInList

This function is used to clear the 'in' list of all commands.

Inputs

Variable	Type	Description
Port name	String	Port name
List	Integer	0 = point list, 1 = script globals

Outputs

Variable	Type	Description
Value	Boolean	True if the list was cleared False if the list was not cleared

Example

```
value:=ODBCClearInList('Recipe2','0');
```

Related:
ODBCClearOutList

ODBCClearOutList

This function is used to clear the 'out' list of all commands.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name
List	Integer	0 = point list, 1 = script globals

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the list was cleared False if the list was not cleared

Example

```
value:=ODBCClearOutList('Recipe3','1');
```

Related:
ODBCClearInList

ODBCIssueRead

This function is used to issue all the commands in the 'in' list.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the command was accepted False if the command was not accepted

The port executes the command in a thread. Check the 'command active' value to determine when all the reads have executed.

Example

```
value:=ODBCIssueRead('Recipe3');
```

Related:
ODBCIssueWrite

ODBCIssueWrite

This function is used to issue all the commands in the 'out' list.

Inputs

Variable	Type	Description
Port name	String	Port name

Outputs

Variable	Type	Description
Value	Boolean	True if the command was accepted False if the command was not accepted

The port executes the command in a thread. Check the 'command active' value to determine when all the writes have executed.

Example

value:=ODBCIssueWrite('Cook4');

Related:
ODBCIssueRead

ODBCDatalogger

This function is used to add a record to the database. The refresh rate must be zero (0) for this command to be successful.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if addition was accepted False if the addition was not accepted

Examples

```
value:=ODBCDatalogger('Air Temp Log');

if value then
beep; //success
```

Related:
ODBCDataLoggerSetRefresh
ODBCDataLoggerPause

ODBCDataLoggerPause

This function is used to pause logging. This only applies to a data logger that was configured with a refresh rate of one hundred (100) or greater.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name
State	Boolean	True = pause False = resume

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the command was accepted False if the command was not accepted

Examples

```
value:=ODBCDataloggerPause('Air Temp Log',True);

if value then
beep; //success
```

Related:
ODBCDatalogger
ODBCDataLoggerSetRefresh

ODBCDataLoggerSetRefresh

This function is used to modify the refresh rate of the data logger. This only applies to a data logger that was configured with a refresh rate of one hundred (100) or greater.

Inputs

Variable	Type	Description
Port name	String	Port name
New rate	Integer	New refresh rate

Outputs

Variable	Type	Description
Value	Boolean	True if new rate was accepted False if the new rate was not accepted

Examples

```
value:=ODBCDataloggerSetRefresh('Air Temp Log',5000);

if value then
beep; //success
```

Related:
ODBCDatalogger
ODBCDataLoggerPause

ODBCSetTableName

This function is used to set the name of the table.

Inputs

Variable	Type	Description
Port name	String	Port name
Table name	String	Table name

Outputs

Variable	Type	Description
Value	Boolean	True if the function succeeded False if the function did not succeed

Example

```
value:=ODBCSetTableName('Recipe2','Large Cookie');

if ODBCSetTableName('Recipe2','Large Cookie') then
begin
//success
end;
```

OmniRetrieveReport

This function is used to command the selected port to retrieve a report from the flow computer. The named report is added to an internal queue. The reports are retrieved in the order added to the queue.

Inputs

Variable	Type	Description
Port name	String	Name of port
Report name	String	Name of report to retrieve
Display	Boolean	Open the report for viewing when retrieval complete

Outputs

Variable	Type	Description
Value	Boolean	True if the report was queued False if the report did not queue

Report names

Name Extension		
Current snapshot .snr	Current status .sts	Current product file .prd
Historical alarm .alr	Historical audit trail .adt	Historical last local snapshot .snl
Batch last .b01	Batch 2nd last .b02	Batch 3rd last .b03
Batch 4th last .b04	Batch 5th last .b05	Batch 6th last .b06
Batch 7th last .b07	Batch 8th last .b08	Daily last .d01
Daily 2nd last .d02	Daily 3rd last .d03	Daily 4th last .d04
Daily 5th last .d05	Daily 6th last .d06	Daily 7th last .d07
Daily 8th last .d08	Prover last .p01	Prover 2nd last .p02
Prover 3rd last .p03	Prover 4th last .p04	Prover 5th last .p05
Prover 6th last .p06	Prover 7th last .p07	Prover 8th last .p08
Archive 701 .701	Archive 702 .702	Archive 703 .703
Archive 704 .704	Archive 705 .705	Archive 706 .706
Archive 707 .707	Archive 708 .708	Archive 709 .709
Archive 710 .710	Alarm 711 .711	Audit 712 .712

NOTE:
1. A blank report name aborts any current report retrieval and empties the queue.
2. The port name and report name are case sensitive.
3. If the named report is in the queue, 'true' is returned and the report is NOT added to the queue.
4. The demo version is limited to the 'Current snapshot' and 'Batch last'.

Example

```
value:=OmniRetrieveReport('Flow1','Current snapshot',false);
```

Related:
OmniViewReport

OmniViewReport

Open the Omni calender report viewing window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

```
OmniViewReport;
```

Related:
OmniRetrieveReport

OpenAlarmLogWindow

Open the alarm log window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

```
OpenAlarmLogWindow;
```

Related:
CloseAlarmLogWindow

OpenAlarmWindow

Open the alarm window.

Inputs

Variable	Type	Description
None		

Outputs

Variable	Type	Description
None		

Example

OpenAlarmWindow;

Related:
CloseAlarmWindow

OpenBrowserWindow

This function is used to open a browser. If the logged on user does not have access rights to the window it will not open and the function will return false. If the URL is blank the URL in the 'Configuration/Browser' dialog is used.

Inputs

Variable	**Type**	**Description**
URL	String	Any allowed string

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window opened False if the window did not open

Warning: The URL can browse the current computer's files, settings, etc..

Example

```
value:=OpenBrowser('http://www.<some web site>/');
if value then
begin
//browser opened
end;

if OpenBrowser('C:\') then
begin
//browser opened
end;
```

OpenDriveStatusWindow

Open the drive status window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

OpenDriveStatusWindow;

OpenEventWindow

Open the event log window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

OpenEventWindow;

Related:
CloseEventWindow
LogEvent

OpenPortDiagnosticWindow

This function is used to open a window and display a ports data.

Inputs

Variable	**Type**	**Description**
Port name	String	Name of the port to monitor

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window opened False if the window did not open

Example

```
value:=OpenPortDiagnosticWindow('MODBUS PORT 1');
if value then
begin
//window opened
end;

if OpenPortDiagnosticWindow ('MODBUS PORT 1') then
begin
//window opened
end;
```

Related:
ClosePortDiagnosticWindow

OpenTagMonitorWindow

This function is used to open a window and display a tags data.

Inputs

Variable	**Type**	**Description**
Tagname	String	Name of the tag

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window opened False if the window did not open

Example

```
value:=OpenTagMonitorWindow('GreenInkFlow2B');
if value then
begin
//window opened
end;

if OpenTagMonitorWindow ('GreenInkFlow2B') then
begin
//window opened
end;
```

Related:
CloseTagMonitorWindow

OpenWindow

This function is used to open a user created window by name. If the logged on user does not have access rights to the window it will not open and the function will return false.

Inputs

Variable	**Type**	**Description**
Window Name	String	Name of window to open

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window opened False if the window did not open

Example

```
value:=OpenWindow('Pump Station 9');
if value then
begin
//window opened
end;

if OpenWindow('Pump Station 9')then
begin
//window opened
end;
```

Related:

CloseWindow
IsUserWindowOpen
OpenWindowEx
OpenWindowUserSelect

OpenWindowEx

This function is used to open a user created window by name. If the logged on user does not have access rights to the window it will not open and the function will return false. The window is positioned at the supplied coordinates.

Inputs

Variable	**Type**	**Description**
Window Name	String	Name of window to open
Horizontal Position	Integer	Left or horizontal
Vertical Position	Integer	Top or vertical
Center	Boolean	Center the window on the horizontal and vertical coordinates
Only Once	Boolean	If a window with the same name is open bring it to the front if true. If false create a new window with the same name.

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window opened False if the window did not open

Warning: The position variables can contain coordinates that are not visible (off screen).

Example

```
value:=OpenWindowEx('Pump Station 9',10,10,false);
if value then
begin
//window is opened with the top and left corner of the window at 10,10
end;

if OpenWindow('Pump Station 9',500,500,true)then
begin
//window is opened and the center of the window is at 500,500
end;
```

Related:
CloseWindow
IsUserWindowOpen
OpenWindow
OpenWindowUserSelect

OpenWindowUserSelect

This function is used to open a user created window the logged on user has access rights to open. A list selection will appear and if the user selects a window and selects the OK button the window will open and the function will return true. Otherwise the function returns false.

Inputs

Variable	**Type**	**Description**
Window Name	String	Name of window to open

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the window opened False if the window did not open

Example

```
value:=OpenWindowUserSelect('Open window…');
if value then
begin
//window opened
end;

if OpenWindowUserSelect('Open window…') then
begin
//window opened
end;
```

Related:
OpenWindow
CloseWindow

PlaySound

This function is used to add a sound to the play list. The sound continues to play until the silence command is issued. The name is case sensitive.

Inputs

Variable	**Type**	**Description**
Sound name	String	Name of the sound to play

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the sound was added to the queue False if the was not added to the queue

Example

```
value:=PlaySound('UserStartedPump');
if value then
begin
//sound added
end;

if PlaySound ('UserStartedPump'') then
begin
//sound added
end;
```

Related:
SilenceCommand
SilenceAcknowledgeCommand
PlaySound2

PlaySound2

This function is used to add a sound to the play list. The name is case sensitive.

Inputs

Variable	**Type**	**Description**
Sound name	String	Name of the sound to play.
Count	Integer	The number of times to play the sound. -1 The sound will play until the "Silence" command is issued. 1 - 500,000 The sound will play X times.
Insert	Boolean	Insert sound after current sound playing.

Note: If "Insert" is true the sound will be inserted in the queue so it is the next sound played. If "Insert" is false the sound will be added to the end of the sound queue. Example: The sound queue contains sounds A B C E D F G. Sound B is playing. PlaySound2 is called with sound name X and insert is true. The sound queue will contain A B X C D E F G. If insert is false the sound queue will contain A B C D E F G X.

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the sound was added to the queue False if the was not added to the queue

Example

```
value:=PlaySound2('UserStartedPump', -1, false); //play the sound until the silence command
if value then
begin
//sound added
end;

if PlaySound2('UserStartedPump", 2, true) then //play the sound 2 times
begin
//sound added
end;
```

Related:
SilenceCommand
SilenceAcknowledgeCommand
PlaySound

PrintScreen

Performs a "Print Screen".

PrintScreenActiveWindow prints only the active window, not the full monitor(s) window.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

PrintScreen;

The same action as pressing the "Print Screen" key.

PrintScreenActiveWindow;

The same action as pressing the "Print Screen" key with the 'ALT' key held down.

Related:
CaptureScreen
CaptureWindow

ReadValue

This function is used to read a value or values from the runtime database.

Inputs

Variable	**Type**	**Description**
Tagname	String	Name of the tag
Item Number	Integer	Data item ID

Outputs

Variable	**Type**	**Description**
Values	Array of variant	Values of tagname/item id

The values can all be of the same type (i.e. Boolean, integer) or they can be of any type as defined by the item number. Each read consists of a tagname and item number pair. If either one is missing all the values returned will be invalid.

The items numbers most used would be:

5000 Process Variable Analog (float)
5007 Process Variable Digital (digital)
5008 Percent of Full Scale (float)
5009 Analog Host Pointer Index (float)

Examples

```
values:=ReadValue(['tagname 1', 5007]);

if values[0] then
;
```

If more than one value needs to be acquired it is faster to combined all reads into one read. It will be faster than executing multiple reads.

```
values:=ReadValue(['tagname 1', 5007, 'tagname 2', 5007]);

if values[0] and values[1] then
;

values:=ReadValue(['tagname 1', 5007, 'tagname 2', 5000]);

if values[0] and (values[1] > 50) then
;
```

Related:
WriteValue
WriteValuePulse

ReloadRecipeSheet

This function is used to reload a sheet into HMI memory. The sheets are loaded when runtime monitoring is started. If changes are made to the sheet data, monitoring must be stopped and restarted or this function called for the recipe. Note: If you make changes to the sheet and want to reload the data, be sure to save the sheet in Excel before calling this function. The data is loaded from the disk file.

Inputs

Variable	**Type**	**Description**
Recipe name	String	Name of a recipe

Outputs

Variable	**Type**	**Description**
None		

Examples

ReloadRecipeSheet('Butter Cookies');
ReloadRecipeSheet('Fuel mixture');

Related:
LoadRecipe

ReportSetCell

This function is used to set the value of a cell in a report when the report is generated at runtime. This function is only used in a script that is called from the report generator. If this function is called outside a report generation it is ignored.

This function completely replaces the text in the cell. The text format and color are unchanged.

Inputs

Variable	**Type**	**Description**
Column	String	Column index (A, B, C, etc.)
Row	Integer	Row index (1, 2, 3, etc.)
Value	String	New cell value

Outputs

Variable	**Type**	**Description**
None		

Example

```
ReportSetCell('A', 4, '123.456');
ReportSetCell('D', 10, 'Limit reached');

ReportSetCell('D', 10, FloatToStr(values[0])); //set a cell to a floating point number
ReportSetCell('D', 11, IntToStr(values[1])); //set a cell to an integer
```

Related:
ReportSetCellColor

ReportSetCellColor

This function is used to set the color of a cell in a report when the report is generated at runtime. This function is only used in a script that is called from the report generator. If this function is called outside a report generation it is ignored.

Inputs

Variable	Type	Description
Column	String	Column index (A,B,C, etc)
Row	Integer	Row index (1,2,3, etc)
TextOrBackground	Boolean	False = set the text color True = set background color
Color	Integer	New color

Outputs

Variable	Type	Description
None		

Example

```
ReportSetCellColor('A', 4, False, 255); //sets the text color
ReportSetCellColor('D', 10, True, 15678); //sets the background color
```

Related:
ReportSetCell

Result

This function is used in point scripts to return a value to the process variable of the point containing the script. It is ignored in other scripts.

Inputs

None

Outputs

None

Warning

When a point script is executed a result can be returned to the process variable of the point using two methods. Use one method only. Using both methods waste processing time and does not produce a different result.

The tagname of the point containing the script is "tag3".

The following examples read the process variable of two inputs, sum the values and returns the result.

Example 1

```
values:=ReadValue(['tag1', 5000, 'tag2', 5000]);
result:=values[0] + values[1];
```

Example 2

```
values:=ReadValue(['tag1', 5000, 'tag2', 5000]);
WriteValue(['tag 3', 5000, values[0] + values[1]]);
```

Example 1 executes faster than example 2.

Related:
ReadValue
WriteValue

SchedulerOpenMonitorWindow

This function opens the scheduler monitor window.

Inputs

Variable	Type	Description
None		

Outputs

Variable	Type	Description
None		

Example

SchedulerOpenMonitorWindow;

Related:
SchedulerSetState
SchedulerSetParameter

SchedulerSetParameter

This function sets the value of a schedule parameter.

Inputs

Variable	Type	Description
Schedule name	String	The name of the schedule.
Parameter name	String	The name of the parameter.
Value	Variant	The new value for the parameter. The value must be a number or true/false.

Outputs

Variable	Type	Description
Result	Integer	0 (zero) True if success Negative number for failure

Example

```
result:=SchedulerSetParameter('Everyday','Room temp',72);
```

Related:
SchedulerOpenMonitorWindow
SchedulerSetState

SchedulerSetState

This function sets the enabled state of a schedule.

Inputs

Variable	**Type**	**Description**
Schedule name	String	The name of the schedule.
Value	Boolean	True sets the schedule enabled False sets the schedule disabled.

Outputs

Variable	**Type**	**Description**
Result	Integer	0 (zero) True if success Negative number for failure

Example

```
result:=SchedulerSetState('Everyday',False);
```

Related:
SchedulerOpenMonitorWindow
SchedulerSetParameter

SendKeys

This function is used to send keystrokes to the system.

Inputs

Variable	**Type**	**Description**
Modifier keys	String	This variable can be empty or contain 1-3 of the modifier keys.
Keys	String	The keys to send to the system. This variable must contain at least one character.

Outputs

Variable	**Type**	**Description**
None		

<u>Modifier keys</u>
Shift +
CTRL ^
ALT %

Examples

```
SendKeys('%','P');
//Send ALT P to the system
```

```
SendKeys('','P');
//Send P to the system
```

```
SendKeys('^%','P');
//Send CTRL + ALT P to the system
```

```
SendKeys('','Test');
//Sends 'Test' to the system
```

```
SendKeys('',chr(173)); // '' is two single quotes
//toggles the mute command to the OS
```

SetAlarmEnables

This function is used to enable or disable the alarm configuration for points. At runtime start the point alarm must have been enabled.

Inputs

Variable	**Type**	**Description**
Tagname	String	Tagname
Enables	Boolean	Enable/Disable

Outputs

Variable	**Type**	**Description**
None		

The tagname variable is an array of tagnames. The array must contain one of more tagnames. The points referenced by the tagnames must all be of the same base type, analog or digital, per command.

The enables variable is an array of Booleans. It must contain two or four Boolean values.

Analog points

SetAlarmEnables(['tagname 1'],[True,True,True,True]); //hihi, hi, lo, lolo

This enables the HiHi, Hi, Lo, and LoLo alarms for the tagname referenced.

To set the alarm enables for more than one point, all to the same state:

SetAlarmEnables(['tagname 1','tagname 2','tagname 3','tagname 4','tagname 5'],
[False,True,True,False]); //hihi false , hi true, lo true, lolo false

Digital points

SetAlarmEnables(['tagname A'],[True,True]); //falling, rising

This enables the falling and rising alarms for the tagname referenced.

To set the alarm enables for more than one point, all to the same state:

SetAlarmEnables(['tagname A','tagname B','tagname C','tagname D','tagname E'],
[False,True]); //falling false , rising true

SetMAStationConfigurationName

This command is used to set an MA station configuration to a configuration via script control. Call this command for each MA station in a window before the window is opened. (If a change is desired.)

Inputs

Variable	**Type**	**Description**
Station Name	String	Name of an MA station
Configration Name	String	Name of an MA station configuration

Outputs

Variable	**Type**	**Description**
None		

Example

```
SetMAStationConfigurationName('Station #1', 'Loop #1');
```

SetNotificationUserEmailAddress

This function is used to change the EMail address of a user configured for EMail notifications.

Inputs

Variable	**Type**	**Description**
User name	String	User name (optional)
User email address	String	Current EMail address (optional)
New email address	String	EMail address to replace the existing address

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the EMail address was replaced False if the EMail address was not replaced

The 'User name' or 'User EMail address' must not be blank. One field must be used.
Changes made at runtime are not saved in the project.
The new EMail address is checked for validity, as much as can be done. If the new address fails, an entry will be placed in the event log and the existing user address will not be changed.
The 'User name' and 'User EMail address' are case sensitive.

Example

Use this format to replace the user EMail address using the existing EMail address.
value:=SetNotificationUserEmailAddress('', 'user1@testsuite.com', 'user1@homeoffice.com');

Use this format to replace the user EMail address using the user name.
value:=SetNotificationUserEmailAddress('Joe Smith', '', 'user1@homeoffice.com');

Possible EMail address errors.

Address is blank
User name too long
Invalid Character
No domain name
Too many @ symbols
User name ends with a period
Domain name ends with a period
Domain name has two periods
Sub domain name has an invalid character
Sub domain name invalid end character
Sub domain name is too short
Missing @ symbol
Domain too long
No user name
Missing . symbol
User name starts with a period
Domain name starts with a period
User name has two periods

SetNotificationUserSMSNumber

This function is used to change the telephone number of a user configured for SMS notifications.

Inputs

Variable	**Type**	**Description**
User name	String	User name (optional)
User telephone number	String	Current telephone number (optional)
New user telephone number	String	Telephone number to replace the existing telephone number

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the EMail address was replaced False if the EMail address was not replaced

The 'User name' or 'User telephone number' must not be blank. One field must be used.
Changes made at runtime are not saved in the project.
The 'User name' is case sensitive.
The 'User telephone number' much match exactly.

Example

Use this format to replace the user telephone number using the existing telephone number.
value:=SetNotificationUserSMSNumber('', '012345678', '987654321');

Use this format to replace the user telephone number using the user name.
value:=SetNotificationUserSMSNumber('Joe Smith', '', '987654321');

SetPortReadEnable

This function is used to enable or disable a read a port is configured to initiate. This could be used for example to read a value or set of values only when a certain screen is viewed.

Inputs

Variable	**Type**	**Description**
Port Name	String	Name of port
Read Index	Integer	Number of the read
Enable	Boolean	Desired state of the read

If the enable is true the read will be active and issued as determined by the port. If enabled if false the read will not be active and the port will not process it. If the requested read enable is false and it is the only active read the command will fail.

Outputs

Variable Type Description

Value Boolean True if the requested state was set.

Example

```
value:=SetPortReadEnable('Chiller Port 1',1,true);
if value then
begin
//read state was set -- enabled
end;

if SetPortReadEnable('Chiller Port 1',1,false) then
begin
//read state was set -- disabled
end;
```

SetTaskState

This function is used to set the enabled state of a task.

Inputs

Variable	Type	Description
Task name	String	Task name
Value	Boolean	True to enable, false to disable

Outputs

Variable	Type	Description
Value	Boolean	True if state was accepted False if state was not accepted

Examples

```
value:=SetTaskState('FTP Task 1',false);

if SetTaskState('FTP Task 1',false) then
begin
//success
end;
```

SetTrendPen

This function is used to change the point.item of one or more pens on a trend. The point.item must have been configured for data logging. The window containing the named trend must be open.

Inputs

Variable	**Type**	**Description**
Window name	String	The name of the window
Trend name	String	The name of the trend

The next variable consist of three parts for each pen to modify.

Pen number	Integer	Pen number (1-8)
Tagname	String	Point tagname (if blank the pen will be deleted)
Item number	Integer	Item number of point

Outputs

Variable	**Type**	**Description**
Result	Integer	0 (zero) True if success Negative number for failure

Note:
1) It is **much** better to set all the pens with one script command than using one command for each pen. The trend reloads all pen data on each command.
2) If the trend is not showing the current date, this command will reset the trend to the current date.

Example

This sets pen 1 of trend "Flow_Trend" in window "Main_Window" to point.item "TankFlow.5000".

```
SetTrendPen('Main_Window','Flow_Trend',[1,'TankFlow',5000]);
```

This sets pen 1 and 2.

```
SetTrendPen('Main_Window','Flow_Trend',[1,'TankFlowUpper',5000,
2,'TankFlowLower',5000]);
```

This sets pen 1, 2 and 8.

```
SetTrendPen('Main_Window','Flow_Trend',[1,'TankFlowUpper',5000,
2,'TankFlowMiddle',5000,
8,'TankFlowLower',5000]);
```

This sets pen 1, clears pen 2 and sets pen 8.

```
SetTrendPen('Main_Window','Flow_Trend',[1,'TankFlowUpper',5000,
2,'',0,
8,'TankFlowLower',5000]);
// '' is two single quotes
```

SetTrendPenMini

This function is used to change the point.item of a "Mini single pen trend".

Inputs

Variable	Type	Description
Window name	String	The name of the window
Mini trend name	String	The name of the mini single pen trend.
Tagname	String	Point tagname (must not be blank)
Item number	Integer	Item number of point

Outputs

Variable	Type	Description
Result	Integer	0 (zero) True if success Negative number for failure

Example

This sets the pen of mini trend "Flow_Trend" in window "Main_Window" to point.item "TankFlow.5000".

```
SetTrendPenMini('Main_Window','Flow_Trend','TankFlow',5000);
```

SetWindowColor

This function is used to set the color of the window.

Inputs

Variable	Type	Description
WindowName	String	The name of the window
Foreground	Integer	Foreground color
Background	Integer	Background color
Brush	Integer	Brush style

Outputs

Variable	Type	Description
None		

Foreground/Background

This is the color selection. If the brush style is 'Solid' or 'Clear' the background color has not effect. The color selection must be in the range of 2,147,483,646 .. 2,147,483,647 ($7FFFFFFF-1 .. $7FFFFFFF). Some common colors are listed below. Use the 'color picker' menu item in the script editor if required.

Brush

The brush must be one of the following values:

Solid = 0
Clear = 1
Horizontal = 2
Vertical = 3
FDiagonal = 4
BDiagonal = 5
Cross = 6
DiagCross = 7

Example

```
//setting window color to red
SetWindowColor('Main_Window',255,255,0);
```

Common colors Value

Black	0	Maroon	128	Green	32768
Olive	32896	Navy	8388608	Purple	8388736
Teal	8421376	Gray	8421504	Silver	12632256
Red	255	Lime	65280	Yellow	65535
Blue	16711680	Fuchsia	16711935	Aqua	16776960
LtGray	12632256	DkGray	8421504	White	16777215
MoneyGreen	12639424	SkyBlue	15780518	Cream	15793151
MedGray	10789024	WebSnow	16448255	WebFloralWhite	15792895
WebLavenderBlush	16118015	WebOldLace	15136253	WebIvory	15794175
WebCornSilk	14481663	WebBeige	14480885	WebAntiqueWhite	14150650
WebWheat	11788021	WebAliceBlue	16775408	WebGhostWhite	16775416
WebLavender	16443110	WebSeashell	15660543	WebLightYellow	14745599

WebPapayaWhip 14020607 WebNavajoWhite 11394815
WebMoccasin 11920639 WebBurlywood 8894686 WebAzure 16777200
WebMintcream 16449525 WebHoneydew 15794160 WebLinen 15134970
WebLemonChiffon 13499135 WebBlanchedAlmond 13495295
WebBisque 12903679 WebPeachPuff 12180223
WebTan 9221330 WebYellow 65535 WebDarkOrange 36095
WebRed 255 WebDarkRed 139 WebMaroon 128
WebIndianRed 6053069 WebSalmon 7504122 WebCoral 5275647
WebGold 55295 WebTomato 4678655 WebCrimson 3937500
WebBrown 2763429 WebChocolate 1993170 WebSandyBrown 6333684
WebLightSalmon 8036607 WebLightCoral 8421616 WebOrange 42495
WebOrangeRed 17919 WebFirebrick 2237106 WebSaddleBrown 1262987
WebSienna 2970272 WebPeru 4163021 WebDarkSalmon 8034025
WebRosyBrown 9408444 WebPaleGoldenrod 11200750
WebLightGoldenrodYellow 13826810
WebOlive 32896 WebForestGreen 2263842
WebGreenYellow 3145645 WebChartreuse 65407 WebLightGreen 9498256
WebAquamarine 13959039 WebSeaGreen 5737262 WebGoldenRod 2139610
WebKhaki 9234160 WebOliveDrab 2330219 WebGreen 32768
WebYellowGreen 3329434 WebLawnGreen 64636 WebPaleGreen 10025880
WebMediumAquamarine 11193702 WebMediumSeaGreen 7451452
WebDarkGoldenRod 755384 WebDarkKhaki 7059389 WebDarkOliveGreen 3107669
WebDarkgreen 25600 WebLimeGreen 3329330 WebLime 65280
WebSpringGreen 8388352 WebMediumSpringGreen 10156544
WebDarkSeaGreen 9419919 WebLightSeaGreen 11186720
WebPaleTurquoise 15658671 WebLightCyan 16777184 WebLightBlue 15128749
WebLightSkyBlue 16436871 WebCornFlowerBlue 15570276
WebDarkBlue 9109504 WebIndigo 8519755 WebMediumTurquoise 13422920
WebTurquoise 13688896 WebCyan 16776960 WebAqua 16776960
WebPowderBlue 15130800 WebSkyBlue 15453831 WebRoyalBlue 14772545
WebMediumBlue 13434880 WebMidnightBlue 7346457
WebDarkTurquoise 13749760 WebCadetBlue 10526303 WebDarkCyan 9145088
WebTeal 8421376 WebDeepskyBlue 16760576
WebDodgerBlue 16748574 WebBlue 16711680 WebNavy 8388608
WebDarkViolet 13828244 WebDarkOrchid 13382297
WebMagenta 16711935 WebFuchsia 16711935 WebDarkMagenta 9109643
WebMediumVioletRed 8721863 WebPaleVioletRed 9662683
WebBlueViolet 14822282 WebMediumOrchid 13850042
WebMediumPurple 14381203 WebPurple 8388736 WebDeepPink 9639167
WebLightPink 12695295 WebViolet 15631086 WebOrchid 14053594
WebPlum 14524637 WebThistle 14204888 WebHotPink 11823615
WebPink 13353215 WebLightSteelBlue 14599344
WebMediumSlateBlue 15624315 WebLightSlateGray 10061943
WebWhite 16777215 WebLightgrey 13882323 WebGray 8421504
WebSteelBlue 11829830 WebSlateBlue 13458026 WebSlateGray 9470064
WebWhiteSmoke 16119285 WebSilver 12632256 WebDimGray 6908265
WebMistyRose 14804223 WebDarkSlateBlue 9125192
WebDarkSlategray 5197615 WebGainsboro 14474460 WebDarkGray 11119017

SetWindowDate

This function is used to change any elements on a window that display data based on a selected date. At present only the "trend" element uses the date.

Another method to view past days trends is using the ViewTrendHistory mouse command.

Inputs

Variable	**Type**	**Description**
WindowName	String	The name of the window.
Day	Integer	Day
Month	Integer	Month
Year	Integer	Year

If the date is not a valid date the command is terminated. If all date fields are "0" then the current date is used. (The date the computer has for the current date).

Example

```
//setting the date to 2 August 2007
SetWindowDate('Tank A Level', 2, 8,2007);
```

Related:
GetUserInputDate

SilenceAcknowledgeCommand

Perform a "Silence" command and then an "Acknowledge" command.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

SilenceAcknowledgeCommand;

Related:
AcknowledgeCommand
SilenceCommand

SilenceCommand

Perform a "Silence”. The silence command stops all sound playing. The sound queue is cleared.

Inputs

Variable	**Type**	**Description**
None		

Outputs

Variable	**Type**	**Description**
None		

Example

SilenceCommand;

Related:
AcknowledgeCommand
SilenceAcknowledgeCommand

SMSSendMessage

This function is used to send an SMS message.

Inputs

Variable	**Type**	**Description**
UserName	String	SMS user name(s)
Message	String	SMS message

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the message was queued False if the message was not queued

Example

Sends the message to one SMS user.

```
value:=SMSSendMessage(['Joe Smith'] , 'Tank 1A overflow');
```

Sends the message to several SMS users.

```
value:=SMSSendMessage(['Joe Smith' , ' Bill Jones' , 'Operations'] , 'Tank 1A overflow');
```

Related:
SMSUserSendMessage

SMSUserSendMessage

This function is used to send an SMS message with user input.

Inputs

Variable	**Type**	**Description**
UserName	String	SMS user name(s), if blank all configured SMS user names are used.
CanChange	Boolean	The user can select from the list of user names.
CanEdit	Boolean	The user can edit the SMS message before sending.
ShowKeyboard	Boolean	If enabled, an on screen keyboard is displayed with the window.
InSMS	String	The SMS message to send. It can be blank and the user will enter the text.
LeftPos	Integer	Horizontal position of the window.
TopPos	Integer	Vertical position of the window.

LeftPos and TopPos refer to the left and top corner of the window. If both values are -1 the window is centered on the main monitor.

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if the message was queued False if the message was not queued

Example

```
value:=SMSSendMessage(['Joe Smith'] , True, True, True, '', -1, -1);
value:=SMSSendMessage(['Joe Smith' , ' Bill Jones' , 'Operations'] , true, true, true, 'Tank 1A
overflow' , 100 ,20);
value:=SMSSendMessage([] , True, True, True, 'Tank 1A overflow' , -1 ,-1);
value:=SMSSendMessage([] , True, True, False, 'Tank 1A overflow' , -1 ,-1); //no keyboard
value:=SMSSendMessage([] , True, False, True, 'Tank 1A overflow' , -1 ,-1); //user cannot edit
```

Related:
SMSSendMessage

StartCameraRecording

This function is used to start camera recording if recording is enabled. This does not affect loop recording if enabled.

Inputs

Variable	**Type**	**Description**
Camera Name	String	Name of camera

Outputs

Variable	**Type**	**Description**
None		

Example

StartCameraRecording('IP_Camera_1');

Related:
StopCameraRecording
CameraSaveLoop

StopCameraRecording

This function is used to stop camera recording if recording is enabled. This does not affect loop recording if enabled.

Inputs

Variable	**Type**	**Description**
Camera	Name	String Name of camera

Outputs

Variable	**Type**	**Description**
None		

Example

StopCameraRecording('IP_Camera_1');

Related:
StartCameraRecording
CameraSaveLoop

StringGet

This function is used to read a string from a port. A valid read must be configured and enabled for the register range containing the string.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name
Address	String	Register address or tagname
Format	Integer	String format in registers
Count	Integer	Number of characters to return

Outputs

Variable	**Type**	**Description**
Value	String	String value

The address is the register address. This value must be a valid address for the type of port configured. For Ethernet/IP it is the tagname of a string type in the PLC.

The format is the byte structure of the registers and might not be applicable for the port type. For registers that are single byte the format is ignored.

Format Description
0 Default
1 2 characters per word, character order high, low -- default ABCD
2 2 characters per word, character order low, high BADC
3 1 character per word, character in high byte
4 1 character per word, character in low byte

PLCs with byte based memory (Siemens) are always 0. One character per byte in order of memory address.

For AB Logix the format and count parameters are ignored. The string returned from the external device is returned in the result. The HMI only supports the Logix defined string type, 82 characters.

For AB PLC5 PCCC the format and count parameters are ignored. The string returned from the external device is returned in the result.

If the result needs to be displayed in a window, save the string in a global, GlobalSet, and use Script Global animation.

Notes:
1. If the start address plus the count is greater than the table length, the results will be

unpredictable. If this is the case, segment the GetString call into 2 or more reads and add the strings together after collection from the tables.
2. For K Sequence (Automation Direct/Koyo) the format should be 2.

Examples

```
value:=StringGet('Pump1','400040',0,14);

//string end past end of table read, string length 20 characters
value1:=StringGet('Pump1','400040',0,14);
value2:=StringGet('Pump1','400014',0,6);
totalString:=value1 + value2;
```

MODBUS Example

Register	Value	Format 0/1	Format 2	Format 3	Format 4
400050	16706	AB	BA	A	B
400051	17220	CD	DC	C	D
400052	23129	ZY	YZ	Z	Y
400053	22615	XW	WX	X	W

value:=StringGet('MPort1','400050',0,8); result would be value = ABCDZYXW
value:=StringGet('MPort1','400050',2,8); result would be value = BADCYZWX
value:=StringGet('MPort1','400050',3,4); result would be value = ACZX
value:=StringGet('MPort1','400050',4,4); result would be value = BDYW

Related:
StringSet

StringSet

This function is used to write a string to a port.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name
Address	String	Register address or tagname
Format	Integer	String format in registers
String	String	The string to write

Outputs

Variable	**Type**	**Description**
Value	Boolean	True if added to write queue False if not added to write queue

The address is the register address. This value must be a valid address for the type of port configured. For Ethernet/IP it is the tagname of a string type in the PLC.

The format is the byte structure of the registers and might not be applicable for the port type. For registers that are single byte the format is ignored.

Format Description

0 Default
1 2 characters per word, character order high, low -- default ABCD
2 2 characters per word, character order low, high BADC
3 1 character per word, character in high byte
4 1 character per word, character in low byte

PLCs with byte based memory (Siemens) are always 0. One character per byte in order of memory address.

Notes:
1. The maximum string length is determined by the PLC/protocol.
MODBUS, Mitsubishi Q: 240 characters
Siemens: 222 characters
AB Logix: 82 characters
2. For word based registers, if the string length is not even, a zero will be written for the unused byte.

Examples

```
value:=StringSet('Pump1','400040',0,'Fire');
value:=StringSet('Pump1','401234',2,'Raise');
```

MODBUS Example

value:=StringSet('Pump1','400050',<format>,'ABCDZYXW');

Register	Format 0/1	Format 2	Format 3	Format 4
400050	AB	BA	A0	0B
400051	CD	DC	B0	0A
400052	ZY	YZ	C0	0D
400053	XW	WX	D0	0C
400054	N/A	N/A	Z0	0Y
400055	N/A	N/A	Y0	0Z
400056	N/A	N/A	X0	0W
400057	N/A	N/A	W0	0X

Related:
StringGet

TimerGet

This function is used to read the value of a script timer field.

Inputs

Variable	**Type**	**Description**
Index	Integer	Timer number
Field	String	Field of the timer

Outputs

Variable	**Type**	**Description**
Value	Variant	Value of requested field

Field Values

Name	**Type**	**Description**
TT	Boolean	Timer enabled and not done. (Timer timing)
DN	Boolean	Timer enabled and accumulator >= preset. (Timer done)
EN	Boolean	Timer enabled
ACC	Integer	Accumulator
PRE	Integer	Preset
ARS	Boolean	Timer Auto Restart

Example

```
value:=TimerGet(7,'TT'); //returns a Boolean
value:=TimerGet(3,'ACC'); //returns an integer
```

Related:
Script Timers
TimerSet

TimerSet

This function is used to set the value of a script timer field.

Inputs

Variable	Type	Description
Index	Integer	Timer number
Field	String	Field of the timer
Value	Variant	New field value

Outputs

Variable	Type	Description
Value	Boolean	Command was successful

Field Values

Name	Type	Description
EN	Boolean	Timer enabled
ACC	Integer	Accumulator
PRE	Integer	Preset
ARS	Boolean	Auto Restart

Note:
Changing the ACC or PRE after the timer has started has no effect on the active timing.

Example

```
//enable timer number 7
value:=TimerSet(7,'EN','True');

//set the preset of timer 10 to 60 seconds
value:=TimerSet(10,'PRE',60);
```

Related:
Script Timers
TimerGet

TrendAddBand

This function adds a band to the trend. The window containing the named trend must be open.

Inputs

Variable	Type	Description
Window name	String	The name of the window
Trend name	String	The name of the trend
Y1 value	Float	The 'Y1' value
Y2 value	Float	The 'Y2' value
Color	Integer	Pen color
Style	Integer	Fill style

Outputs

Variable	Type	Description
Result	Integer	0 (zero) True if success Negative number for failure

Color

Refer to SetWindowColor for a list of common colors. The script editor has an "Insert color" command.

Style

Refer to SetWindowColor for a list of fill styles.

Example

result:=TrendAddBand('Main_Window','Flow_Trend',20,80,255,7); //Y1,Y2 axis value, color, fill style

Related:
TrendAddLimit
TrendRemoveLimits

TrendAddLimit

This function adds a limit line (fixed horizontal line) to the trend. The window containing the named trend must be open.

Inputs

Variable	**Type**	**Description**
Window name	String	The name of the window
Trend name	String	The name of the trend
Y value	Float	The 'Y' value
Color	Integer	Line color
Width	Integer	Line width (pen)
Style	Integer	Pen style

Outputs

Variable	**Type**	**Description**
Result	Integer	0 (zero) True if success Negative number for failure

Color

Refer to SetWindowColor for a list of common colors. The script editor has an "Insert color" command.

Width

The pen width. A value from 1 to 64.

Note:
1) If the pen width is greater than one (> 1) the style is solid. Pen styles only apply to a pen width of one (1).

Style

The style must be one of the following values:
Solid = 0
Dash = 1
Dot = 2
DashDot = 3
DashDotDot = 4

Example

This adds a solid red line with a width of three pixels at the Y axis point of fifty.
result:=TrendAddLimit('Main_Window','Flow_Trend',50,255,3,0); //Y axis value, color, pen width, pen style

Related:
TrendAddBand
TrendRemoveLimits

TrendRemoveLimits

This function removes all limits and bands from a trend. The window containing the named trend must be open.

Inputs

Variable	**Type**	**Description**
Window name	String	The name of the window
Trend name	String	The name of the trend

Outputs

Variable	**Type**	**Description**
Result	Integer	0 (zero) True if success Negative number for failure

Example

result:=TrendRemoveLimits('Main_Window','Flow_Trend');

Related:
TrendAddLimit
TrendAddBand

TrendSavePlotPictureToFile

This function saves the plot image to a file. The window containing the named trend must be open.

Inputs

Variable	**Type**	**Description**
Window name	String	The name of the window
Trend name	String	The name of the trend
Path	String	The complete path and file name. The file extension selects the file type.
ZoomToFit	Integer	Zoom before picture capture. 0 = X and Y axis 1 = X axis 2 = Y axis Any other number, the zoom amount is not altered.

Outputs

Variable	**Type**	**Description**
None		

File type Extension
Bitmap BMP
JPEG JPG
PNG PNG
Metafile EMF

Note:
1. If a file with the same name/path exist, it will be overwritten.

Example

TrendSavePlotPictureToFile('Flow Trend Window', 'Amps', 'C:\test.bmp',0);
TrendSavePlotPictureToFile('Flow Trend Window', 'Volts', 'C:\test.jpg',1);
TrendSavePlotPictureToFile('Flow Trend Window', 'GPM', 'C:\test.png',2);
TrendSavePlotPictureToFile('Flow Trend Window', 'Flow', 'C:\test.emf',3); //do not alter zoom amount

Valve2Input

This function is used to calculate one of four states from two inputs. The most common use would be to determine the "state" of a valve. This function generates an integer result based on the values of two digital inputs

Inputs

Variable	Type	Description
Tagname 1	String	Name of the tag
Item Number 1	Integer	Data item ID
Tagname 2	String	Name of the tag
Item Number 2	Integer	Data item ID

Outputs

Variable	Type	Description
Value	Integer	Result of truth table

The input values must be Boolean as defined by the item number. All inputs must be present.

Truth Table

Input 1	Input 2	Result
True	True	1
False	False	2
False	True	3
True	False	4

Example

value:=Valve2Input('valveOpened', 5007,'valveClosed', 5007);

In this example:

If value = 1 the opened and closed inputs are both true and a valve fault condition.
If value = 2 the opened and closed inputs are both false and a valve travel condition.
If value = 3 the opened input is false and the closed input is true and a valve closed condition.
If value = 4 the opened input is true and the closed input is false and a valve opened condition.

WriteMultiple

This function is used to write multiple values, in one command, to an external device. This command does not write to the internal database.

Inputs

Variable	**Type**	**Description**
Port name	String	Port name
Address	String	Starting address
Data type	Integer	The data type 0 = 32 bit float 1 = 32 bit signed integer 2 = 32 bit unsigned integer
Values Array	Array of values to write	

Outputs

Variable Type Description
None

Note: The only communications port supporting this command is the "Delta Motion Control" (DMCP). Contact support if another communications port is needed. Not all communication protocols provide a function to write multiple locations in one command.

The number/count/limit of "Values" that can be written in one command is defined by the communication protocol. If the count exceeds that limit the write will not occur.

DMCP
TCP/IP = 1024
UDP/IP = 256

The values must all be of the same type. Values are converted to match the "Data type".

Examples of automatic conversion

#1
WriteMultiple('Arm 1', '58.26', 1, [1, 56 ,-89 , 58.7]); //Data type = 1 (signed integer), start address 58.26, values

Value 1, 56 and -89 will be unchanged. The value 58.7, a float, will be converted to 59.

#2
WriteMultiple('Arm 1', '58.26', 2, [1, 56, -89, 58.2]); //Data type = 2 (unsigned integer), start address 58.26, values

Value 1 and 56 will be unchanged. The value -89, a signed integer, will be converted to 89 and the value 58.2, a float, will be converted to 58.

Examples

```
WriteMultiple('Arm 1', '58.26', 0, [1.56,-23.76, 5.0]);
WriteMultiple('Arm 1', '58.26', 1, [1,-23, 5]);
WriteMultiple('Arm 1', '58.26', 2, [1,23, 5]);
```

Related:
WriteValue
WriteValuePulse

WriteValue

This function is used to write a value or values to the runtime database.

Inputs

Variable	**Type**	**Description**
Tagname	String	Tagname to modify
Item Number	Integer	Item to modify
Item Value	Variant	Value to assign to tagname/ID

Outputs

Variable	**Type**	**Description**
None		

The values can all be of the same type (i.e. Boolean, integer) or they can be of any type as defined by the item number.

Scaling
If the tag type is analog and the "scaled enabled" is true the value is interpreted as in "engineering units" and the value is scaled to "instrument range" before output to the connected device. If the "scaled enabled" is not true the value is interpreted as in "instrument range" and the value is not converted before it is output to the connected device.

Read/Write
If the access rights is read/write the value is assigned to the internal stored value location and any other processing is preformed just as if the value had come from the connected devices. The value is then transmitted to the connected device. The next time the connected device supplies a new value the internal stored value is replaced. The time between the "WriteValue" command and the next refresh from the external device may be very short or very long.

The items numbers most used would be:

5000	Process Variable Analog (float)
5007	Process Variable Digital (digital)
5008	Percent of Full Scale (float)
5009	Analog Host Pointer Index (float)

Examples

```
WriteValue(['tagname 1', 5007, 1]);
```

If you need to write more than one value you can combine them all into one write. It will be faster than executing multiple writes.

```
WriteValue (['tagname 1', 5007, 1, 'tagname 2', 5007, 25]);
```

Related:
ReadValue
Result
WriteValuePulse

WriteValuePulse

This function is used to write a value to the runtime database and then write the inverted value after a defined time has elapsed.

Inputs

Variable	Type	Description
Tagname	String	Tagname to modify
Item number	Integer	Item to modify
Initial value	Boolean	Value to assign to tagname/ID
Time delay	Integer	Time delay in seconds

Outputs

Variable	Type	Description
None		

Read/Write
If the access rights is read/write the initial value is assigned to the internal stored value location and any other processing is preformed just as if the value had come from the connected devices.

The initial value is then transmitted to the connected device.

The next time the connected device supplies a new value the internal stored value is replaced. The time between the "WriteValue" command and the next refresh from the external device may be very short or very long.

After the time has elapsed, if the access rights is read/write the inverted initial value is assigned to the internal stored value location and any other processing is preformed just as if the value had come from the connected devices.

The inverted initial value is then transmitted to the connected device.

The next time the connected device supplies a new value the internal stored value is replaced. The time between the second "WriteValue" command and the next refresh from the external device may be very short or very long.

Write
If the access rights is write, the initial value is transmitted to the external device. After the elapsed time the inverted initial value is written to the external device.

The items numbers most used would be:

5007 Process Variable Digital (digital)

Examples

```
WriteValuePulse('tagname 1', 5007, 1,10);
```

Related:
ReadValue
Result
WriteValue

In addition to the above functions are the standard language functions. For help on any of these functions please contact technical support.

Abs
AnsiCompareStr
AnsiCompareText
AnsiLowerCase
AnsiUpperCase
Append
ArcTan
Assigned
AssignFile
Beep
Chdir
Chr
CloseFile
CompareStr
CompareText
Copy
Cos
CreateOleObject
Date
DateTimeToStr
DateToStr
DayOfWeek
Dec
DecodeDate
DecodeTime
Delete
EncodeDate
EncodeTime
EOF
Exp
FilePos
FileSize
FloatToStr
Format
FormatDateTime
FormatFloat
Frac
GetActiveOleObject
High
Inc
IncMonth
InputQuery
Insert
Int
IntToHex
IntToStr
IsLeapYear
IsValidIdent
Length
Ln
Low
LowerCase
Now
Odd
Ord
Pos
Raise
Random
ReadLn
Reset
Rewrite
Round
Scripter
SetOf
ShowMessage
Sin
Sqr
Sqrt
StrToDate
StrToDateTime
StrToFloat
StrToInt
StrToIntDef
StrToTime
Time
TimeToStr
Trim
TrimLeft
TrimRight
Trunc
UpperCase
VarArrayCreate
VarArrayHighBound
VarArrayLowBound
VarIsNull
VarToStr
Write
WriteLn

WARNING

The scripts in points should only call the following commands:

GetSystemVariable
Result
ReadValue
WriteValue
WriteValuePulse

WriteValue and WriteValuePulse should not be used to write to points in external devices from a point script. The only points written to inside a point script must be internal points in the HMI-Host Port.

Calling the other script commands or writing to external points will most likely result in unstable operation or complete failure.

The runtime script editor provides for editing and debugging scripts.

WARNING

Be aware when executing/running/debugging scripts in the runtime editor it may conflict with an in memory script results.

When you compile a script at runtime it writes to disk any changes you have made to the script. If you are testing/debugging make copies of the script before making changes and make changes to the copy. Once you are satisfied, copy the changes to original script as needed.

Each example is separated by a dashed (---------------------) line.

This was an analog host point script. The user had a tank level gauge that reported a range of 0 - 111 inches. The output was in gallons.

```
const
cRadius = 50.0;
cRadius2 = cRadius * cRadius;
cTankFactor = 0.0135;

begin
// replace the ExternalTankLevel with the tagname from the real tank level tag.
values:=ReadValue(['ExternalTankLevel', 5000]);
result:=values[0] * cRadius2 * cTankFactor; //tank level in inches * 50 * 50 * 0.0135
end;
```

The user wanted to toggle a bit. The 'ToggleBoolean' mouse command is a better choice if the command is via the user clicking the mouse in a graphic element.

```
values:=ReadValue(['C100', 5007]);
if values[0] then
WriteValue(['C100', 5007, 0]) // it is on, turn it off
else
WriteValue(['C100', 5007, 1]); // it is off, turn it on
```

The input word from a MODBUS register is 0 - 65535. We need that as a "small integer" -32768 - 32767. (After this was published we added support for small integers to the point definition.)

```
values:=ReadValue(['Power Factor', 5000]);
//(raw in - raw low) * ((eu high - eu low) / (raw high - raw low)) + eu low
```

```
result:= values[0] * ((32767- -32768) / 65535) + -32768;
```

This script was executed via a task command when a user logged in. It opened a different window for each user.

```
values:=GetSystemVariable(11); //get the user name

if (values[0] = '' ) then //no one logged in
Exit;

//Uppercase just to prevent possible case typos
case UpperCase(values[0]) of
UpperCase('Bob'):
begin
CloseAllUserWindows;
OpenWindow('Main');
end;
UpperCase('Sue'):
begin
CloseAllUserWindows;
OpenWindow('Money');
end;
UpperCase('Frank'):
begin
CloseAllUserWindows;
OpenWindow('Taste');
end;
UpperCase('Joe'):
begin
CloseAllUserWindows;
OpenWindow('Sales');
end;
end;
```

This is a script to append some values to a text file.

```
const
fileName = 'C:\test.txt';
var
FFile:TextFile;
value1,value2,value3,finalString:string;
begin
AssignFile(FFile,fileName); //get a file handle
Append(FFile); //open the file, the file must exist

//the strings to write are stored in script globals. Either populate the script globals
//earlier in this script or some other script or method.
value1:=GlobalGet('fileWrite','string1') + ',';
value2:=GlobalGet('fileWrite','string2') + ',';
value3:=GlobalGet('fileWrite','string3');

finalString:=value1 + value2 + value3;

WriteLn(FFile,finalString); //write the string
CloseFile(FFile); //close the file
FFile.Free; //release the memory
end;
```

The input value was in GPM and it was needed as GPS (gallons per second).
This is a point script.

```
values:=GetSystemVariable(1);
currentSecond:=values[2];
lastSecond:=GlobalGet('Flow','lastSecond');

if (currentSecond = lastSecond) then //we have a new second
Exit; //no so leave, nothing to do
```

```
value:=GlobalSet('Flow','lastSecond',currentSecond); //save it

values:=ReadValue(['GPM',5000]); //get the gpm
if (values[0] > 0) then //if the gpm is > 0 then do the calc
begin
overflow:=GlobalGet('Flow','overflow'); //from last time
totalClicks:=GlobalGet('Flow','total'); //total 100 gal clicks

gps:=values[0] / 60; //the gallons per second
overflow:=overflow + gps; //add to the existing overflow

if (overflow >= 100) then //less than 100 nothing to do
begin
remainder:=overflow mod 100; //how much to carry over
toClick:=trunc(overflow / 100); //how many clicks this pulse
totalClicks:=totalClicks + toClick; //the total 100x clicks

if (totalClicks > 1000000) then
totalClicks:=0;

value:=GlobalSet('Flow','overflow',remainder); //save for next run
end
else
value:=GlobalSet('Flow','overflow',overflow); //save for next run

value:=GlobalSet('Flow','total',totalClicks); //save the total clicks
result:=totalClicks;
end;
```

This script was in the startup script to clear the values.

```
value:=GlobalSet('Flow','overflow','0'); //from last run, clear it
value:=GlobalGet('Flow','total'); //load last total
WriteValue(['GPMScaledTo100clicks',5000,value]); //write to point
```

This was a script to read the value of a 'knob' graphic element when it changed and set 3 boolean values in the PLC.

```
values:=ReadValue(['KnobValue',5000]);
case values[0] of
0:
begin
WriteValue(['Off point',5007,1]); //off - on
WriteValue(['On point',5007,0]); //on - off
WriteValue(['Auto point',5007,0]); //auto - off
end
1:
begin
WriteValue(['Off point',5007,0]); //off - off
WriteValue(['On point',5007,1]); //on - on
WriteValue(['Auto point',5007,0]); //auto - off
end
2:
begin
WriteValue(['Off point',5007,0]); //off - off
WriteValue(['On point',5007,0]); //on - off
WriteValue(['Auto point',5007,1]); //auto - on
end
end
```

This example collects the IP addresses of the computer and stores the result in a script global.

```
var
i:integer;
s1:string;
begin
```

```
values:=GetSystemVariable(15); //get the IP addresses
if (values[0] = 0) then //might not have any IP addresses
begin
GlobalSet('IP_Addresses','All','No IP addresses');
Exit;
end;

//if here we have at least one address
s1:=''
for i:= 1 to values[0] do
begin
s1:= s1 + values[i]; //add the next IP address to the string
if (i < values[0]) then //if we have more add a carriage return
s1:= s1 + #13;
end;
GlobalSet('IP_Addresses','All',s1); //save the string
end;
```

GRAPHIC ELEMENT SCRIPTS

Note:

1) If the hide or on/off animation is enabled and the condition to hide the graphic element is true, the script will not execute.

2) If the script has a compile error or a fatal error during execution (i.e. divide by zero), the graphic element foreground color will be set to the "Quality bad color".

3) The script animation is the last animation processed before the graphic element is rendered. For example, if an animation sets the foreground color to red and the script sets the foreground color to blue, the graphic element will be rendered with a foreground color of blue. Note 1 above is the exception.

The graphic element script engine uses a subset of the scripting engine commands.

Add
AddDigital
AllTrue
AnyTrue
Average
DigitalCompare
GetPortCounters
GetSystemVariable
GlobalGet
GlobalSet
IsUserWindowOpen
MousePosition
ReadValue
StringGet
TimerGet
Valve2Input

The graphic element fields are exposed via the ge.<property name>.

The fields are the same that are automatically modified via the animations. Not all graphic elements utilize all fields. For example, the text fields of the 'ge' do not apply to a plain rectangle.

These are the field names.

Hidden
ForegroundColor
BackgroundColor
BrushStyle
PenColor
PenWidth
PenStyle
FontSize
FontStyle
FontName
Rotation
Left
Top
Right
Bottom
StartAngle
EndAngle
Text
TextAlignment
ValueMax
ValueMin

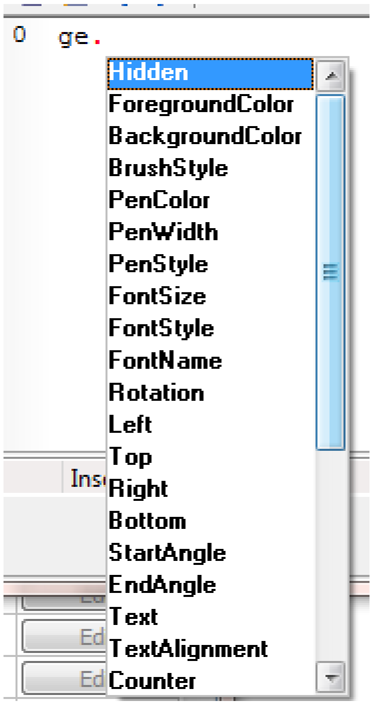
ValueMax and ValueMin are used for gauge ranges. Note: Changing these values at runtime may cause the gauge to appear distorted because other design time settings control display features of the gauge.

The fields are accessed using ge.<property name>

For example:

```
ge.Visible:=false;                    //hide the graphic element
ge.ForegroundColor:=clBlue;           //set the foreground color to blue
ge.ForegroundColor:=125479;           //set the foreground color to a custom color
```

Type ge. in the script editor and a properties selection list will appear.



```
0   ge.
```

Hidden
ForegroundColor
BackgroundColor
BrushStyle
PenColor
PenWidth
PenStyle
FontSize
FontStyle
FontName
Rotation
Left
Top
Right
Bottom
StartAngle
EndAngle
Text
TextAlignment
Counter

Colors

In the script editor you can access the predefined colors by the menu "Edit/Insert color..." or by typing color. and the color selection will appear for selection.

Pen styles

The pen styles are psSolid, psDash, psDot, psDashDot, psDashDotDot and psClear. Per MS windows, of the pen width is greater than 1, the pen style is psSolid.

Brush styles

The brush styles are: bsSolid, bsClear, bsHorizontal, bsVertical, bsFDiagonal, bsBDiagonal, bsCross and bsDiagCross.

Text alignment

The text aligments are: DT_LEFT, DT_CENTER and DT_RIGHT.

Text style

The text styles are: fsBold, fsItalic, fsUnderline and fsStrikeOut.

User values

Every graphic element, using scripting, has an 'object'. This object provides several features. One feature is user storage that persist while the graphic element is in use. The object contains 32, of each, Booleans, integers (-2147483648...2147483647), singles (4 byte float, 1.5e-45 ... 3.4e+38) and strings. If the index is out of bounds, the result will be false for boolean, zero for integer and single and a blank string for string.

The values are accessed via "GetXXX" and "SetXXX" functions.

GetUserBoolean, GetUserInteger, GetUserSingle and GetUserString
SetUserBoolean, SetUserInteger, SetUserSingle and SetUserString

```
value:=ge.GetUserBoolean(0); //0-31 Booleans
value:=ge.GetUserInteger(31); //0-31 integers
value:=ge.GetUserSingle(23); //0-31 singles
value:=ge.GetUserString(5); //0-31 strings
```

```
ge.SetUserBoolean(8,true); //the first value is the index, the second is the value to store
ge.SetUserInteger(7,12); //the first value is the index, the second is the value to store
ge.SetUserSingle(3,12.34); //the first value is the index, the second is the value to store
ge.SetUserString(11,'test'); //the first value is the index, the second is the value to store
```

Other fields/properties

Counter

This field is set to 0 when the graphic element script is executed the first time the graphic element is created and is incremented each time the script is executed. The field will rollover to 1 after the value 2,147,483,647 is reached. When the graphic element is destroyed (when the window is closed) the counter will restart at 0 when the script executes the first time. Warning: This property can be written in the script.

Example

```
if (ge.Counter = 0) then
begin

//first script execution when the graphic element is created

end;
```

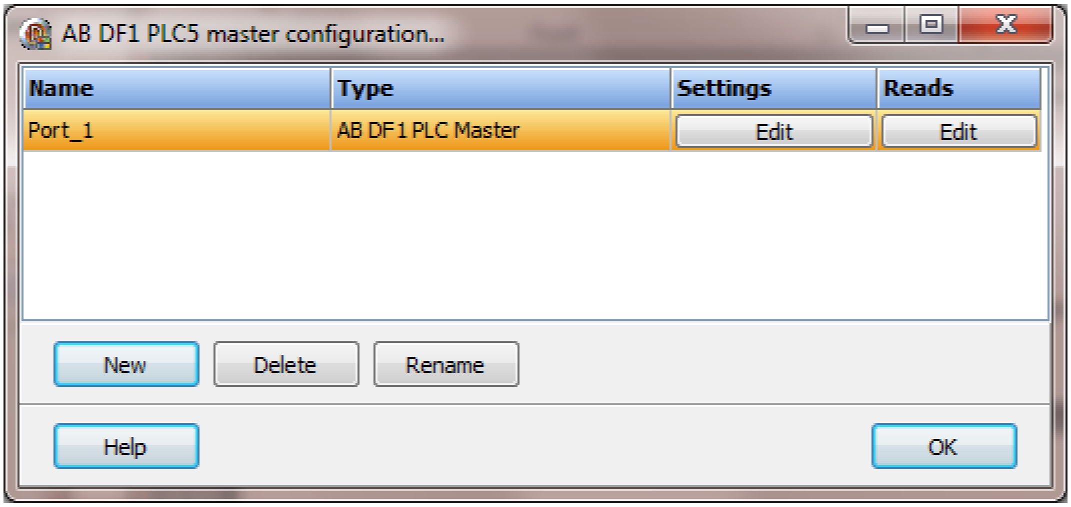
Examples

This example changes the foreground color of a graphic element based on the value of two digital inputs.

```
value:=Valve2Input('ValveOpen',5007,'ValveClosed',5007);
case value of
1: ge.ForegroundColor:=clGray; //fault
2: ge.ForegroundColor:=clYellow; //travel
3: ge.ForegroundColor:=clGreen; //closed
4: ge.ForegroundColor:=clRed; //open
end;
```

AB DF1 PLC5

Each AB DF1 master object is listed in the window.


AB DF1 PLC5 master configuration...
New
Delete
Rename
Help
OK

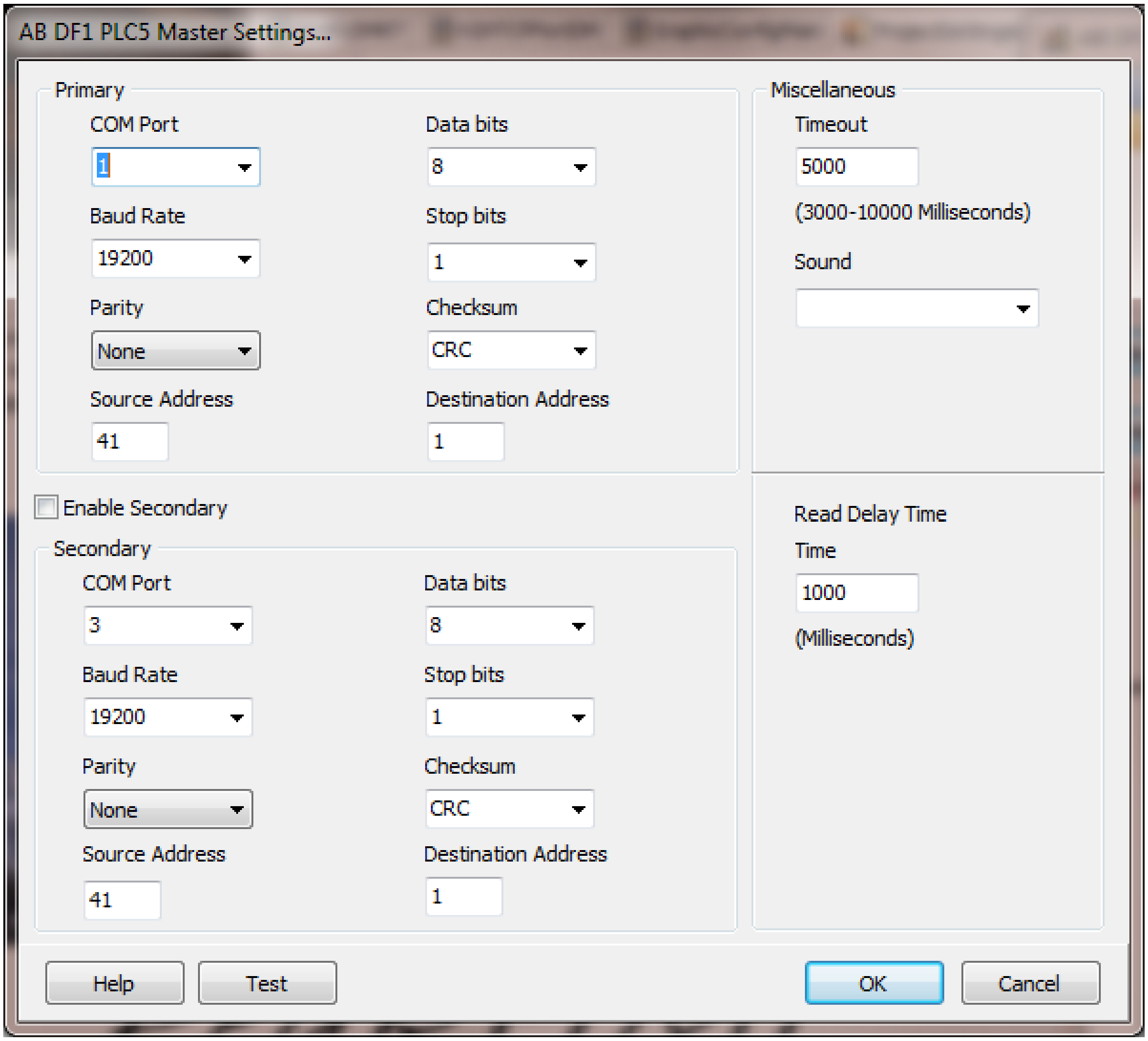
Name	Type	Settings	Reads
Port_1	AB DF1 PLC Master	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an AB DF1 master object select the "Delete" button.

Settings



AB DF1 PLC5 Master Settings...

Primary

COM Port: 1
Data bits: 8
Baud Rate: 19200
Stop bits: 1
Parity: None
Checksum: CRC
Source Address: 41
Destination Address: 1

Miscellaneous

Timeout: 5000
(3000-10000 Milliseconds)
Sound:

☐ Enable Secondary

Secondary

COM Port: 3
Data bits: 8
Baud Rate: 19200
Stop bits: 1
Parity: None
Checksum: CRC
Source Address: 41
Destination Address: 1

Read Delay Time

Time: 1000
(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary

communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Source and Destination Address

These values are in octal. Check the device documentation for allowable values. For example: Using a KF2 to connect to a PLC, the source address must match the switch settings on the KF2. If the KF2 address switches are set to 51 (octal) enter 41 (decimal).

NOTE: If the receiving module has the "ignore duplicate messages" option enabled, and the number of reads is one (1) or the number of reads is greater than one (1) but only one (1) read is enabled the message will be ignored and data collection will fail. Disabling the "ignore duplicate messages" option will prevent messages from being ignored under both conditions described. If that is not possible, create a dummy read, for example N7:0 with a count of 1. A dummy read is a read with a different address than the single read. Verify the dummy read is enabled.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

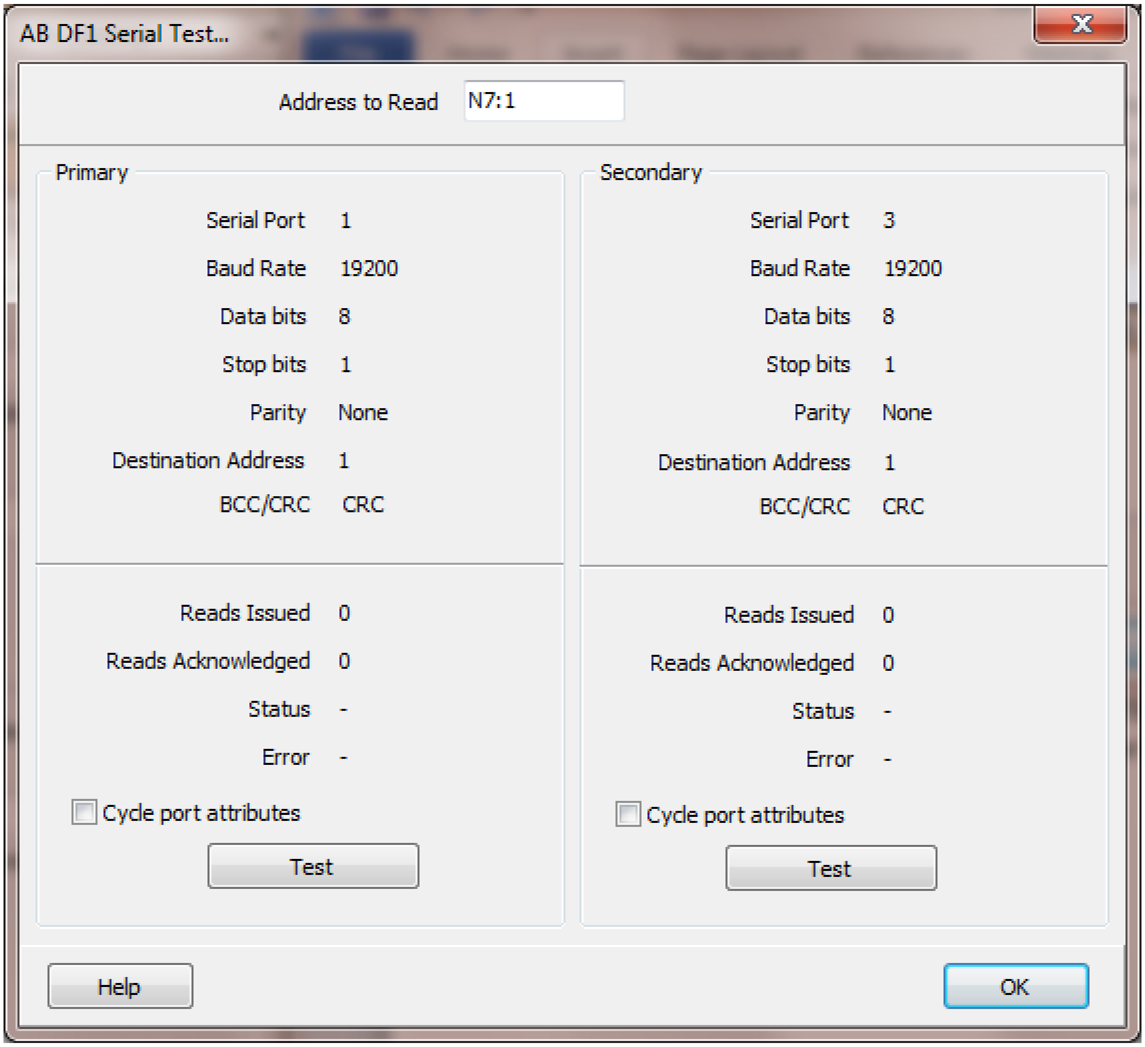
When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



Address to Read N7:1

Primary

Serial Port 1
Baud Rate 19200
Data bits 8
Stop bits 1
Parity None
Destination Address 1
BCC/CRC CRC

Reads Issued 0
Reads Acknowledged 0
Status -
Error -

☐ Cycle port attributes

Secondary

Serial Port 3
Baud Rate 19200
Data bits 8
Stop bits 1
Parity None
Destination Address 1
BCC/CRC CRC

Reads Issued 0
Reads Acknowledged 0
Status -
Error -

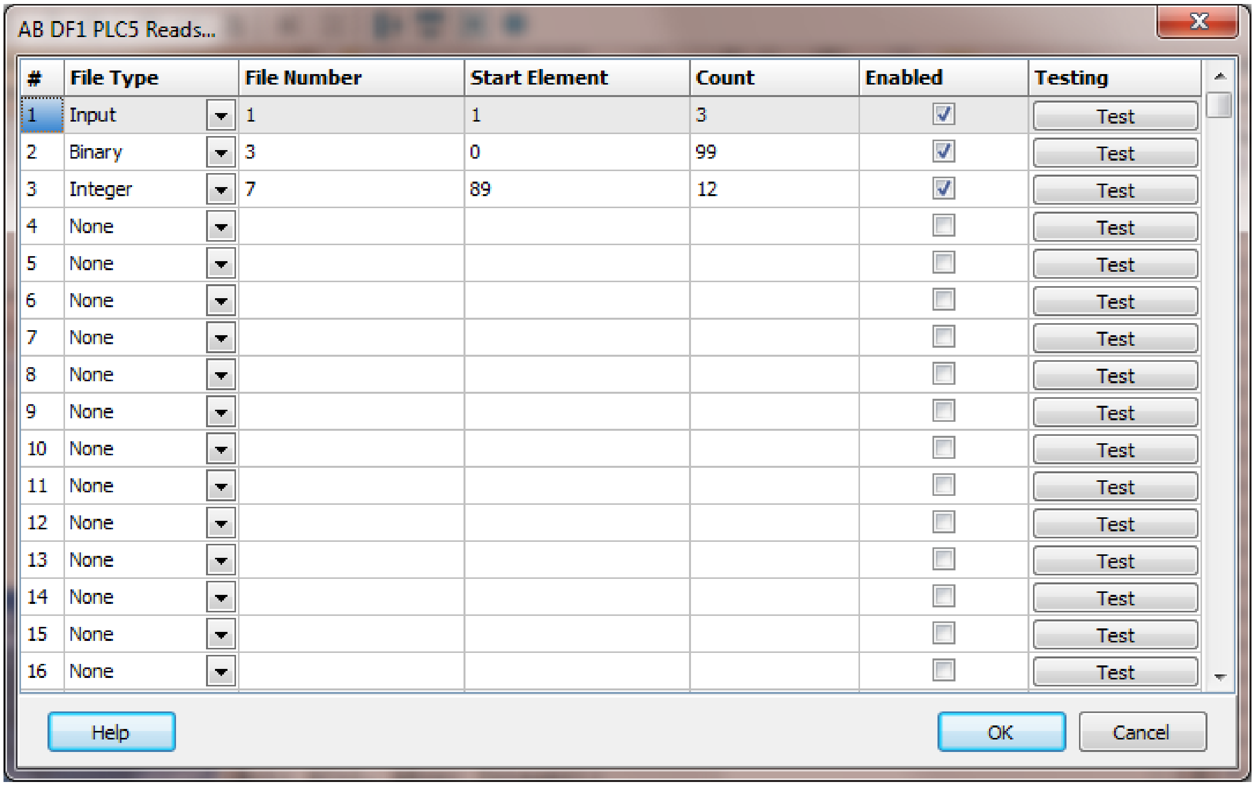
☐ Cycle port attributes

When the test button is selected the program will attempt to read one element of data from the device at the address entered.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	File Type	File Number	Start Element	Count	Enabled	Testing
1	Input	1	1	3	☑	Test
2	Binary	3	0	99	☑	Test
3	Integer	7	89	12	☑	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the AB defined addressing for access to the data files in the PLC. Please refer to the AB documentation.

The DF1 Duplicate Message Detection' logic may be enabled in the communication device. If more than one read command is enabled the detection logic will not cause a problem. If only one read command is enabled the Duplicate Message Detection' logic must be disabled. (Or create another read command)

Example address:

Common

N7:10, N7:451/0, N7:33/15
T4:152/TT,T4:152/EN,T4:152.ACC

B3:45/5
B3/567

I:001/00, I:010/15
O:001/01, O:012/17

Note: Input and output references are in octal for point addressing. The input and output reference must contain the complete address. The value after the colon must be three digits and any bit references must be two digits. Example I:XXX or O:XXX I:001, O:005, I:001/01, O:005/17, I:022/01, O:019/17, I:167/00, O:177/17

Legal file numbers are 3 to 999. File number 0 is for outputs, file number 1 is for inputs and file number 2 is for status. If the file type is input, output, or status the file number is set to the correct value when the 'OK' button is selected.

File Type

Example: Integer (N), Input (I), Binary (B)

File/Slot

Legal file numbers are 3 to 999. File number 0 is for outputs, file number 1 is for inputs and file number 2 is for status. If the file type is input, output, or status the file number is set to the correct value when the 'OK' button is selected.

Start Element

The starting element to read. The different file types have different element counts. Example. Integer (N) has a one word element, Timer (T) has a three word element. This is the starting element for the file type.

Count

The number of elements to read. The file type determines the maximum number of elements that can be read in a single command.

The maximum is 122 words (244 bytes) of data.

Enabled

The read requests are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

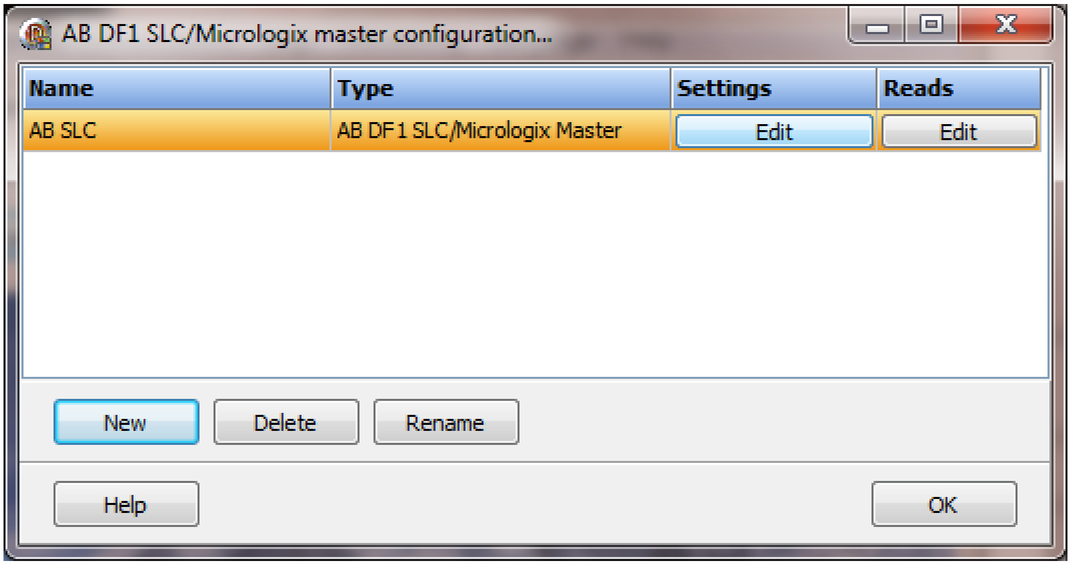
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains 'STS' or 'EXT STS' the text that follows is the error code ,in hexadecimal, returned from the external device. The HMI uses a function code $0F. PCCC, assuming the port test succeeded, if "Forward open success..." is displayed and does not change, close the testing window and reattempt the test.

Error messages

No file type selected	A file type must be selected.
Element out of range	Start element must be: 0-999
Count exceeds limit	The number of elements to read is too high for the file type.
Element start + count exceeds limit	Element start + count greater than file end.
Count < 1	Must read at least one element
File number out of range	The file number must be: 0-999

AB DF1 SLC/MICROLOGIX

Each AB DF1 master object is listed in the window.


AB DF1 SLC/Micrologix master configuration...

Name	Type	Settings	Reads
AB SLC	AB DF1 SLC/Micrologix Master	Edit	Edit

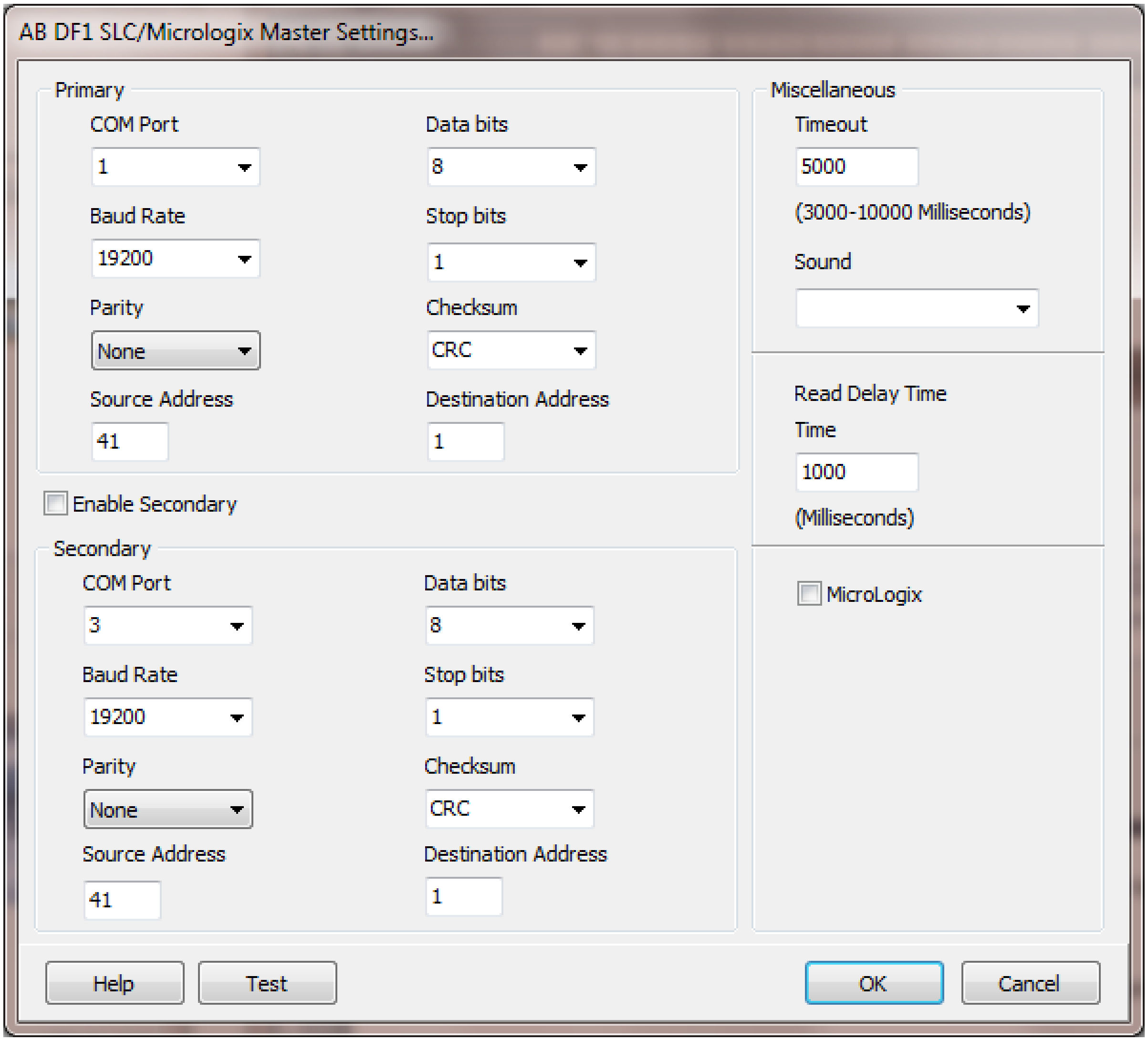
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an AB DF1 master object select the "Delete" button.

Settings


AB DF1 SLC/Micrologix Master Settings...

Primary
COM Port: 1
Data bits: 8
Baud Rate: 19200
Stop bits: 1
Parity: None
Checksum: CRC
Source Address: 41
Destination Address: 1

☐ Enable Secondary

Secondary
COM Port: 3
Data bits: 8
Baud Rate: 19200
Stop bits: 1
Parity: None
Checksum: CRC
Source Address: 41
Destination Address: 1

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time
Time: 1000
(Milliseconds)

☐ MicroLogix

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary

communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Source and Destination Address

These values are in octal. Check the device documentation for allowable values. For example: Using a KF2 to connect to a PLC, the source address must match the switch settings on the KF2. If the KF2 address switches are set to 51 (octal) enter 41 (decimal).

NOTE: If the receiving module has the "ignore duplicate messages" option enabled, and the number of reads is one (1) or the number of reads is greater than one (1) but only one (1) read is enabled the message will be ignored and data collection will fail. Disabling the "ignore duplicate messages" option will prevent messages from being ignored under both conditions described. If that is not possible, create a dummy read, for example N7:0 with a count of 1. A dummy read is a read with a different address than the single read. Verify the dummy read is enabled.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

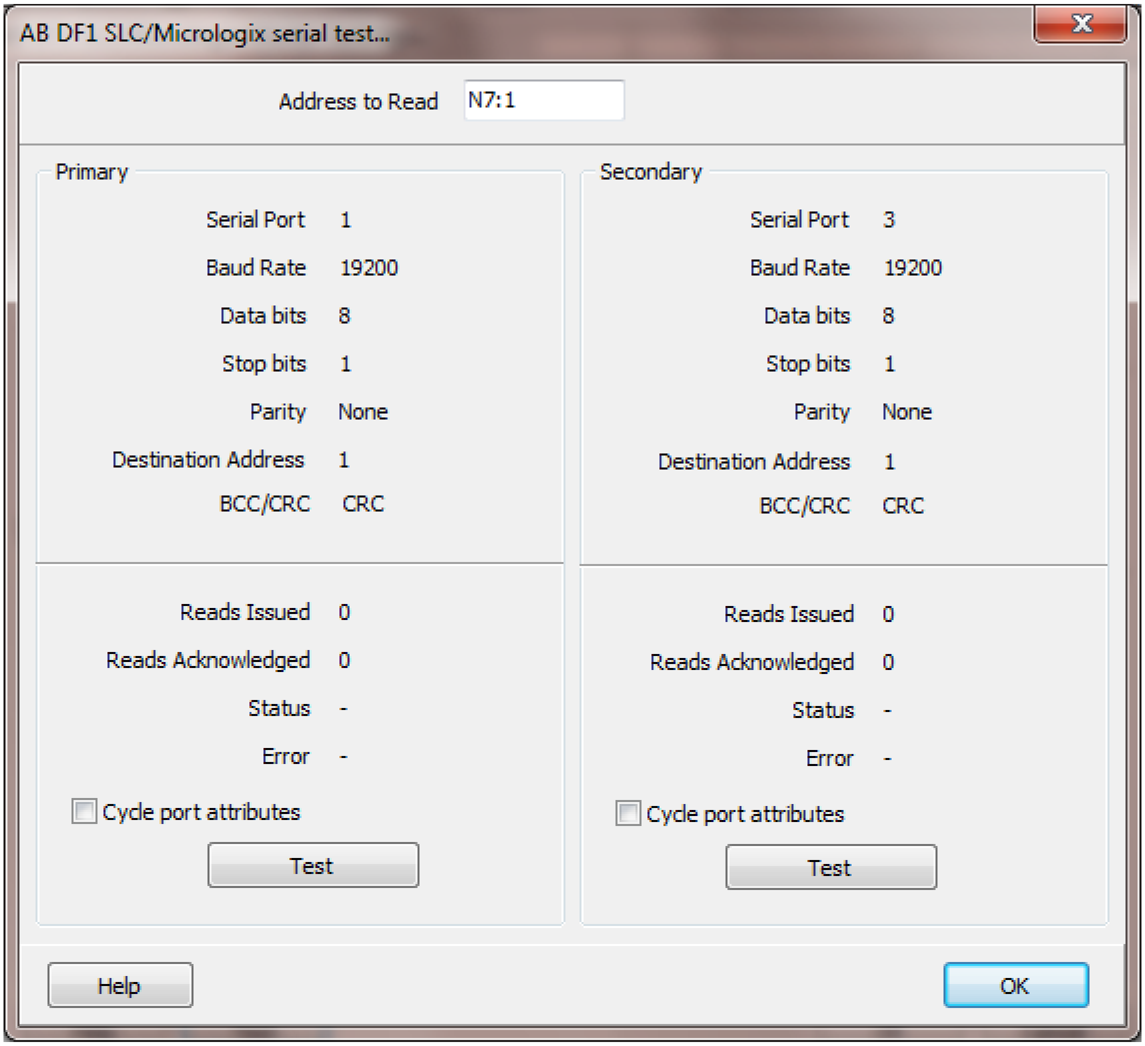
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



Address to Read N7:1

Primary
Serial Port 1
Baud Rate 19200
Data bits 8
Stop bits 1
Parity None
Destination Address 1
BCC/CRC CRC
Reads Issued 0
Reads Acknowledged 0
Status -
Error -
☐ Cycle port attributes

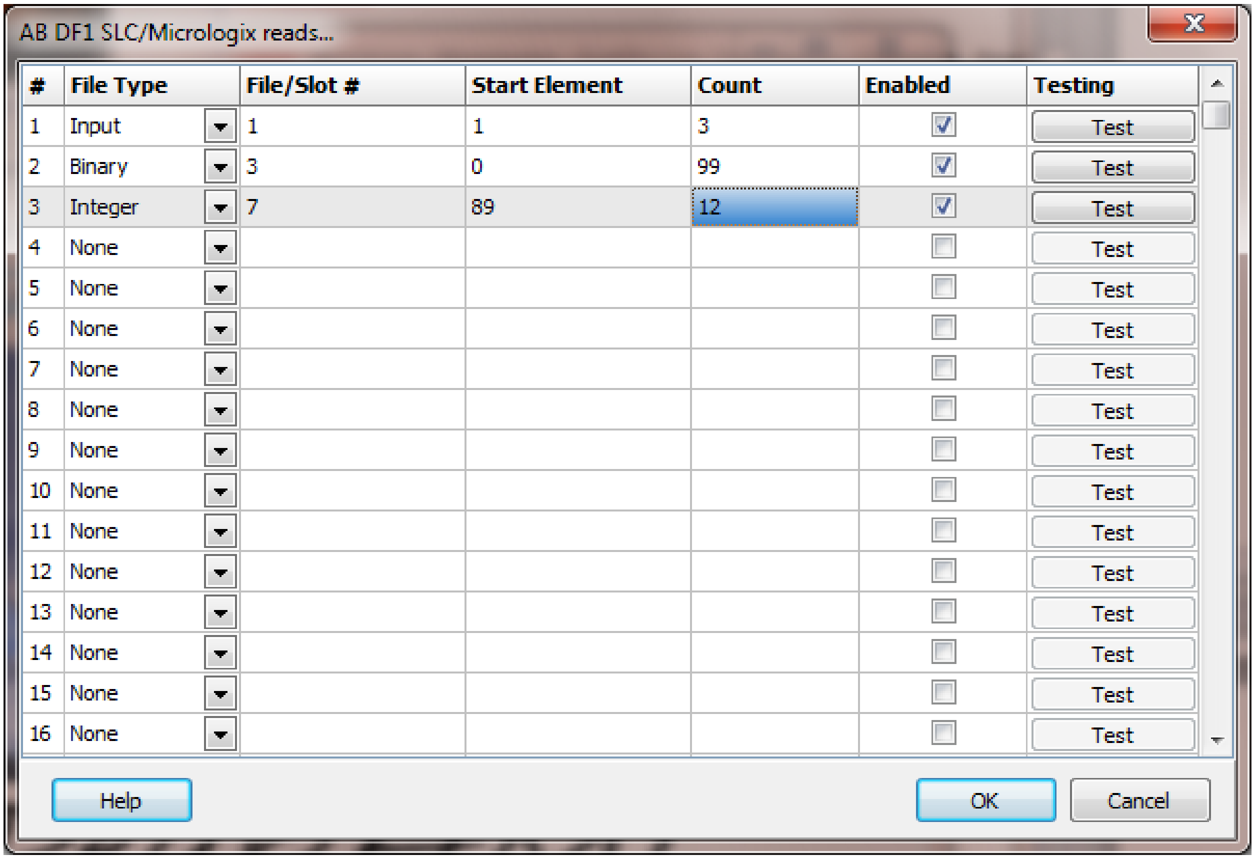
Secondary
Serial Port 3
Baud Rate 19200
Data bits 8
Stop bits 1
Parity None
Destination Address 1
BCC/CRC CRC
Reads Issued 0
Reads Acknowledged 0
Status -
Error -
☐ Cycle port attributes

When the test button is selected the program will attempt to read one element of data from the device at the address entered.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	File Type	File/Slot #	Start Element	Count	Enabled	Testing
1	Input	1	1	3	☑	Test
2	Binary	3	0	99	☑	Test
3	Integer	7	89	12	☑	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the AB defined addressing for access to the data files in the PLC. Please refer to the AB documentation.

The DF1 Duplicate Message Detection' logic may be enabled in the communication device. If more than one read command is enabled the detection logic will not cause a problem. If only one read command is enabled the Duplicate Message Detection' logic must be disabled. (Or create another read command)

Example address:

Common

N7:10, N7:451/0, N7:33/15
T4:152/TT,T4:152/EN,T4:152.ACC
B3:45/5
B3/567

I:1.0/00, I:1.1/12, I:4.4/15
O:2.0/01, O:7.0/16, O:8.1/31

Fixed SLC, SLC 5/01 and 5/02 do not support digital input and output data table access. The format of the address must be used.

I:X.X/XX
O:X.X/XX

File Type : Slot . Word / Bit

Note: When configuring reads if the file type is input or output be aware that setting the count greater than the number of words the card supports, may or may not return data (a successful read). In some cases the PLC will return the data for the selected card (slot) and additional cards (slots) up to the count value.

Example:
Slot 1 1746-IA16 1 word
Slot 4 1747-KE 45 words
Slot 5 1746-NI8 8 words
Slot 6 1746-IA16 1 word

A read
Slot = 1
Start element = 0
Count = 45

For this read the PLC will return 45 words of data. The data past the first word I:1.0 is for other cards.

For the HMI point source address and PLC addressing to match, configure one read for each populated slot (if data is needed) and set the count to the number of words the card utilizes.

File Type

Example: Integer (N), Input (I), Binary (B)

File/Slot

Legal file numbers are 3 to 255. For inputs and outputs the file number is the slot number.

Start Element

The starting element to read. The different file types have different element counts. Example. Integer (N) has a one word element, Timer (T) has a three word element. This is the starting element for the file type.

Count

The number of elements to read. The file type determines the maximum number of elements that can be read in a single command.

For SLC 5/01 or 5/02 = 82 bytes (41 words).
For SLC 5/03 or 5/04 = 236 bytes (118 words).

Example: Timer (T) 3 words per element. Maximum count is 40.
Float (F) 2 words per element. Maximum count is 61.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

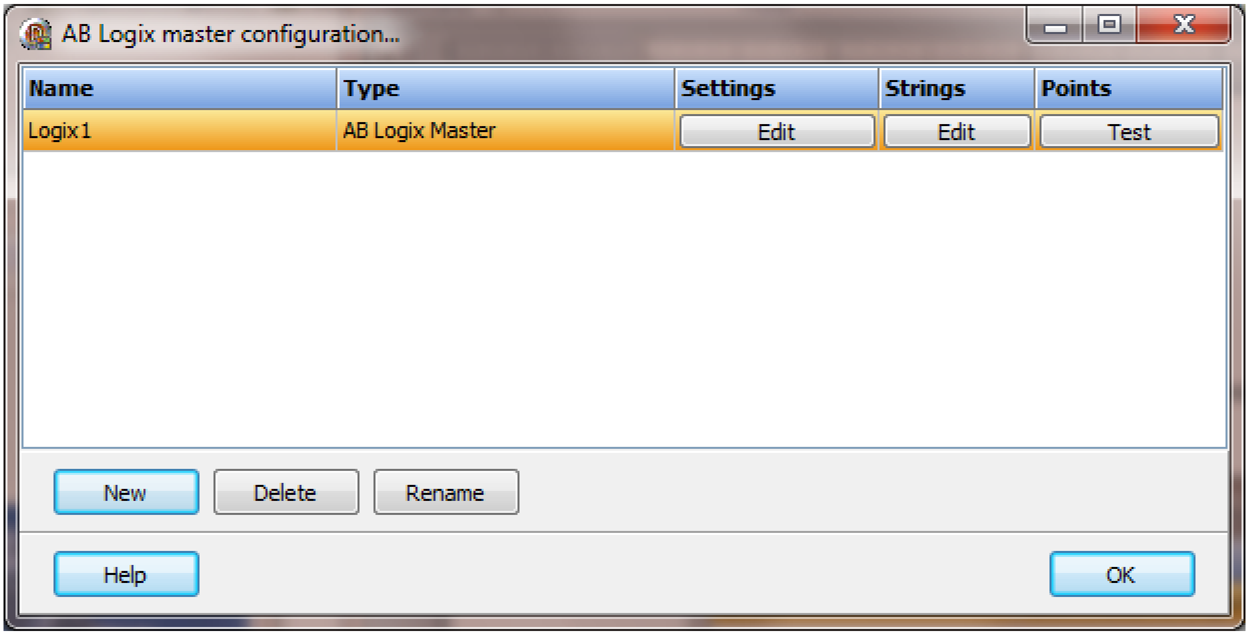
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains 'STS' or 'EXT STS' the text that follows is the error code ,in hexadecimal, returned from the external device. The HMI uses a function code $0F. PCCC, assuming the port test succeeded, if "Forward open success..." is displayed and does not change, close the testing window and reattempt the test.

Error messages

No file type selected	A file type must be selected.
Element out of range	Start element must be: 0-255
Count exceeds limit	The number of elements to read is too high for the file type.
Element start + count exceeds limit	Element start + count greater than file end.
Count < 1	Must read at least one element
File number out of range	The file number must be: 0-255
Invalid file type	The file number does not match the assigned file type.

AB LOGIX

Each AB Logix master object is listed in the window.


AB Logix master configuration...
New
Delete
Rename
Help
OK

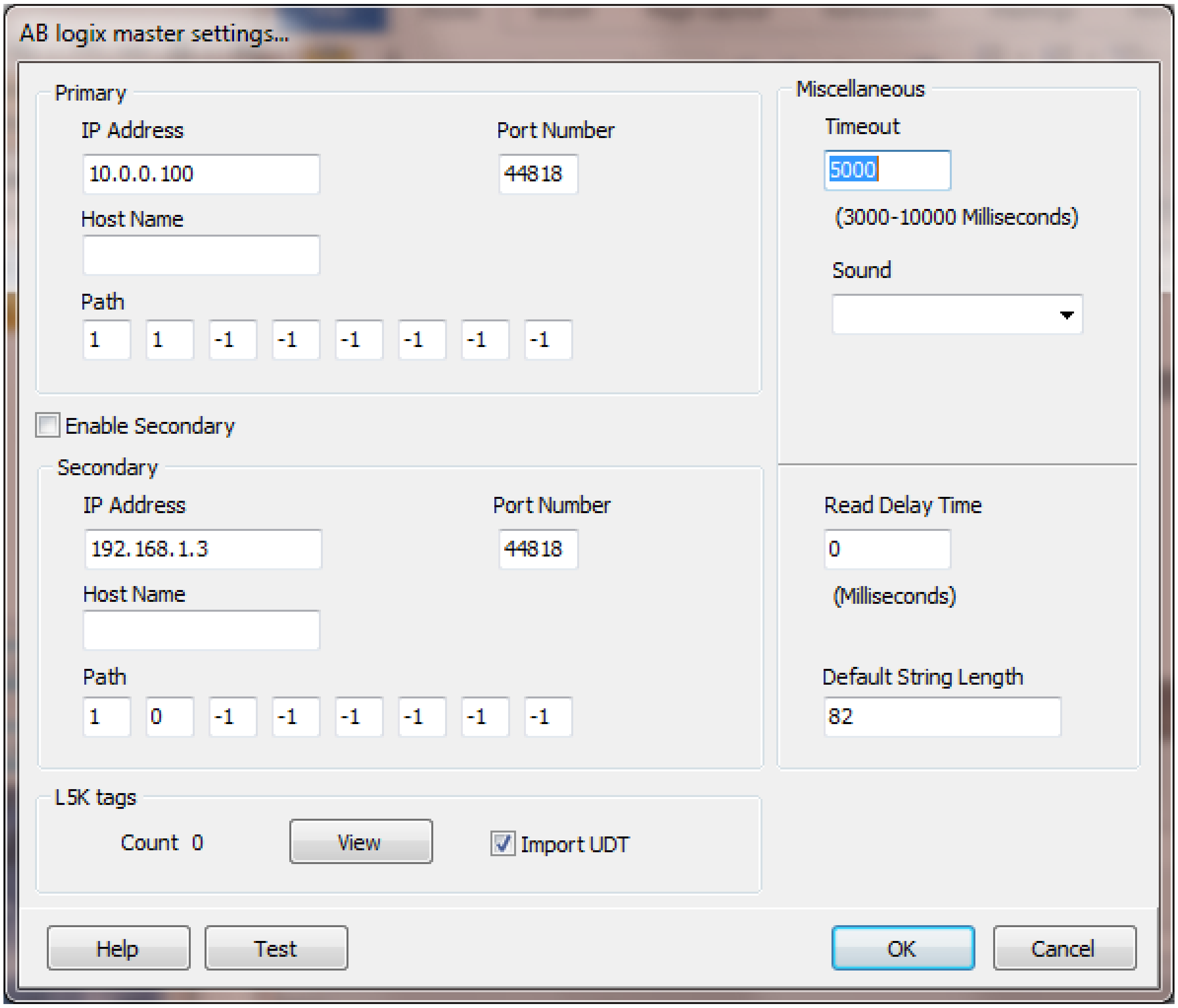
Name	Type	Settings	Strings	Points
Logix1	AB Logix Master	Edit	Edit	Test

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an AB Logix master object select the "Delete" button.

Settings



AB logix master settings...

Primary

IP Address: 10.0.0.100

Port Number: 44818

Host Name:

Path: 1 1 -1 -1 -1 -1 -1 -1

☐ Enable Secondary

Secondary

IP Address: 192.168.1.3

Port Number: 44818

Host Name:

Path: 1 0 -1 -1 -1 -1 -1 -1

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 0

(Milliseconds)

Default String Length: 82

L5K tags

Count 0

☑ Import UDT

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Path

This is the path to the endpoint (controller). A "-1" value in the path is ignored. The most common path will be 1 - 0. That is from the Ethernet/IP card to the CPU (slot 0). If the CPU was in slot 1 the path would be 1 - 1. All the non used path fields must be -1. If the path is to a CPU in another rack the path would be longer. Please refer to AB documentation for proper path settings.

Example

Rack 1

Slot 0 ControlNet card
Slot 1 CPU
Slot 2 Ethernet/IP card

Rack 2

Slot 0 ControlNet card
Slot 1 CPU

To access the CPU in rack 2 the path would be: 1 - 0 - 2 - 9 - 1 - 1

1 = Ethernet/IP
0 = ControlNet card in Rack 1 slot 0
2 = Channel 1 of ControlNet card
9 = Rack 2
1 = ControlNet card in Rack 2 slot 0
1 = CPU Rack 2 Slot 1

Enable Secondary

The "Enable Secondary" checkbox provides for a second path to be used as a hot backup. When in run mode the primary configuration is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary configuration. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary configuration, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary configuration an entry will be made in the event log and operations will return to the primary port.

If the computer has two network interface cards (NIC) the program will use the first one detected for the primary and the second one detected for the secondary. If only one NIC is detected the program will use it for the primary and the secondary.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:
The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Default String Length

Logix has a default string length of 82 characters. That is the default size for the data type STRING is 82 bytes. If a few strings are to be collected this value can be unchanged. If many strings are to be accessed and the maximum string length is less than 82, it will allow faster access to define a structure in Logix of type 'string' and set the length to the maximum string length.

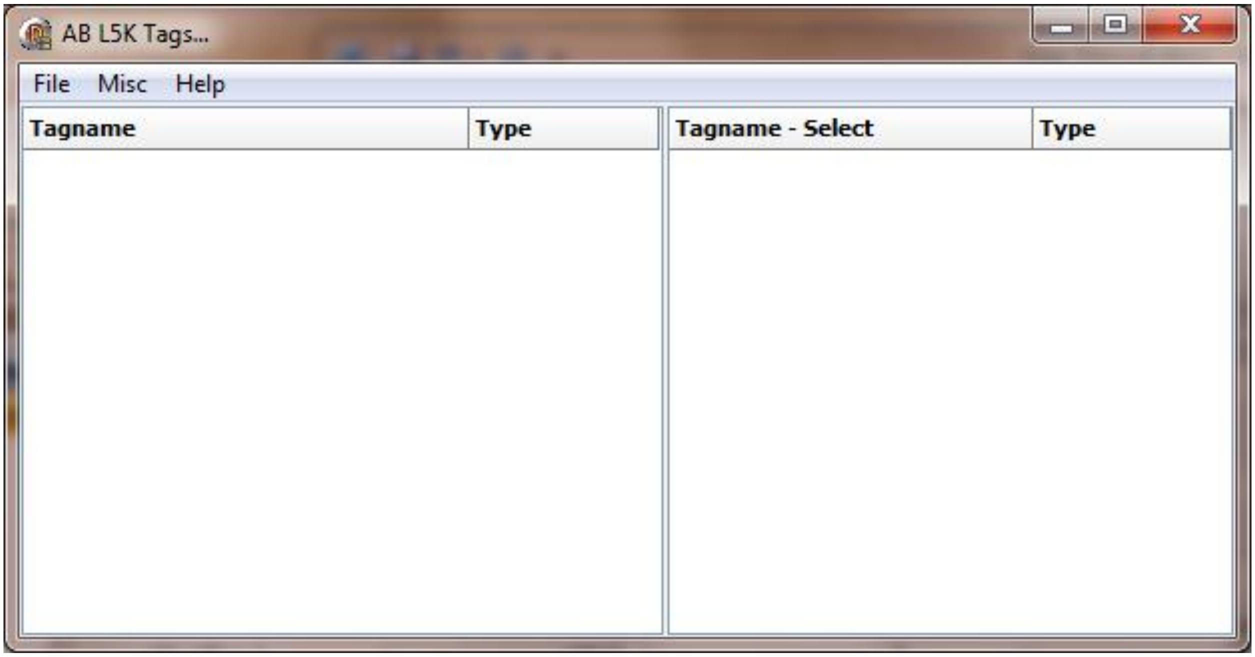
When a string is read in Logix and the string is the default size all 82 bytes are returned regardless of the actual string length. For example, String_1 is declared and it contains the value 'High'. When the HMI reads the string, 82 bytes are returned. Defining a structure and setting the length to the maximum length the string will contain and using this new type for String_1 will allow faster access to strings.

If the strings to access are larger than 82 bytes a new type must be defined. When configuring the string in the HMI set the length to the maximum length of the string. If you need assistance with this please contact HMI technical support.

L5k tags

The HMI can attempt to parse an ".L5K" file for controller tags and program tags. The parsed list can be used for copying and pasting the tag names when creating/editing points. Refer to the source address section of this help file for point address formats when used with Logix controllers.

View

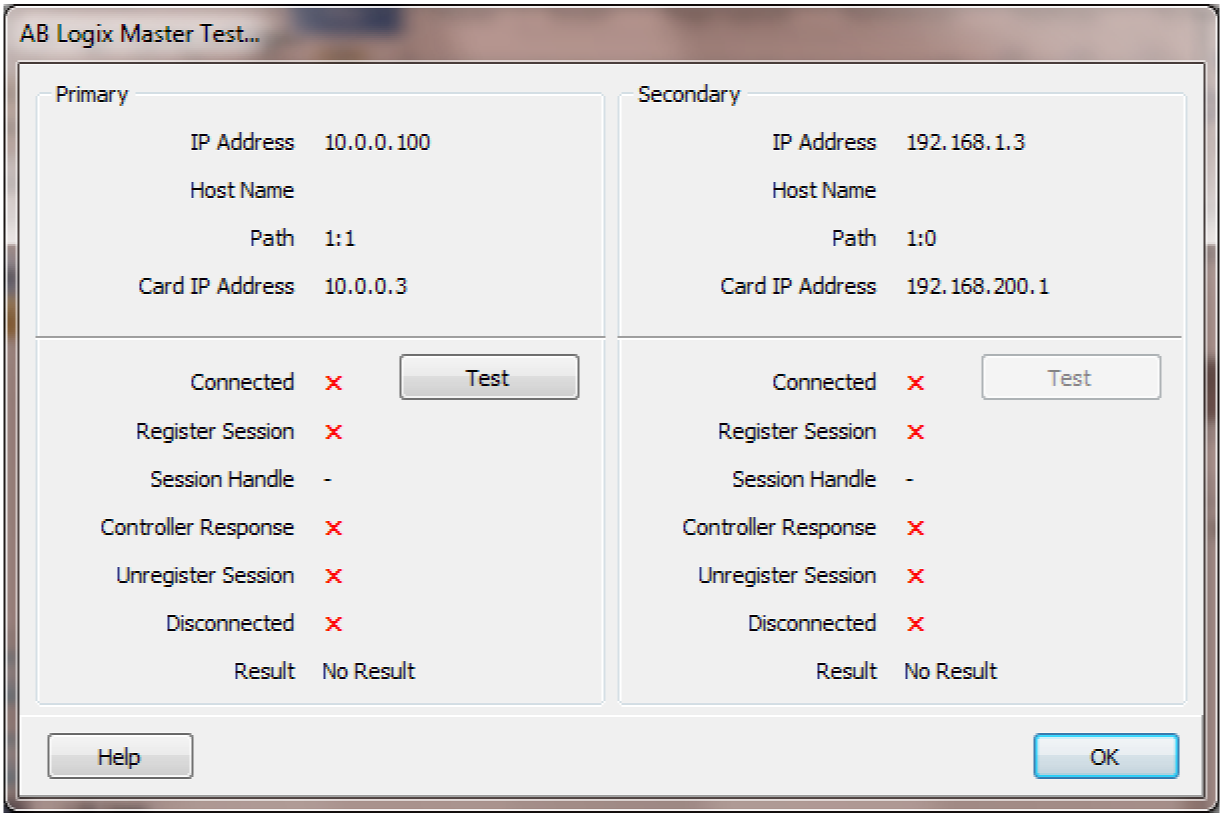


Import UDT

When enabled the program will attempt to import the 'User Data Type' structures and save them in the project path to a file named 'ABCustomTypes.ini'.

Notes:
1. The system overhead time slice (SOTS) may need to be adjusted for optimum operations.
2. If communication performance is degraded due to a **very** large number of tags, consider creating two or more ports and dividing the tags between the ports. The number of ports (open connections) the PLC allows is determined by the PLC.

Test button



AB Logix Master Test...

Primary

IP Address 10.0.0.100
Host Name
Path 1:1
Card IP Address 10.0.0.3

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

Secondary

IP Address 192.168.1.3
Host Name
Path 1:0
Card IP Address 192.168.200.1

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

When the test button is selected the program will attempt to connect to the ENET card, register a session and get the attributes of the Logix controller.

If the connection is the primary it will bind the socket to the first NIC detected.

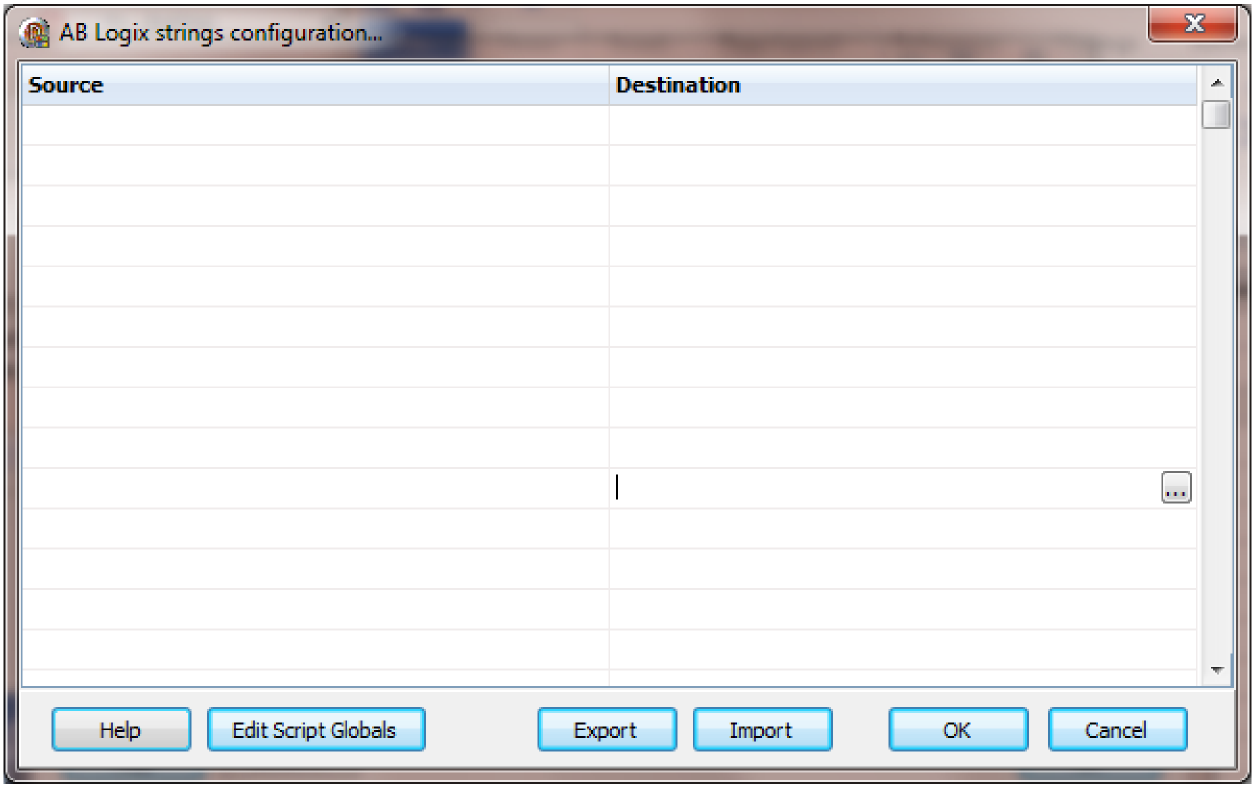
If the connection is the secondary it will bind the socket to the second NIC if detected. If a second NIC is not installed it will bind the socket to the first NIC detected.

If a "host name" is entered the IP address is ignored.

Connected:	Connection to ENET card
Register Session:	Request a session handle
Session Handle:	Session handle value
Controller Response:	Command to the controller
Unregister Session:	Release the session handle
Disconnected:	Disconnect from the ENET card
Result:	Test result
Failed:	Could not connect to the ENET card

Partial Success: Connected to the ENET card, failed Logix controller response
Success: Connected to ENET card, successful Logix controller response
A partial success result is normally due to an incorrect path setting or the controller is missing.

Strings


AB Logix strings configuration...
Source
Destination
...
Help
Edit Script Globals
Export
Import
OK
Cancel

Strings are not regular points. They do not have alarms, printing, etc. Strings may be displayed in any window via the "Script Global" animation. Any other actions, parsing, comparing, etc. must be done in scripts. The default string length is 82 characters and is the only string length supported for setting string values.

Source

This is the tagname in the PLC. It must be a valid tagname with a datatype "string".

Destination (optional)

If desired, select a script global location and the string will be copied to the location when the string value is returned by the external device. If this option is used or not the string may still be accessed via the "StringGet" and "StringSet" script commands. If this is configured and access to the string, in a script, is desired use the "GlobalGet" or "StringGet" to copy the string. The format of the destination is: <section>.<name>.

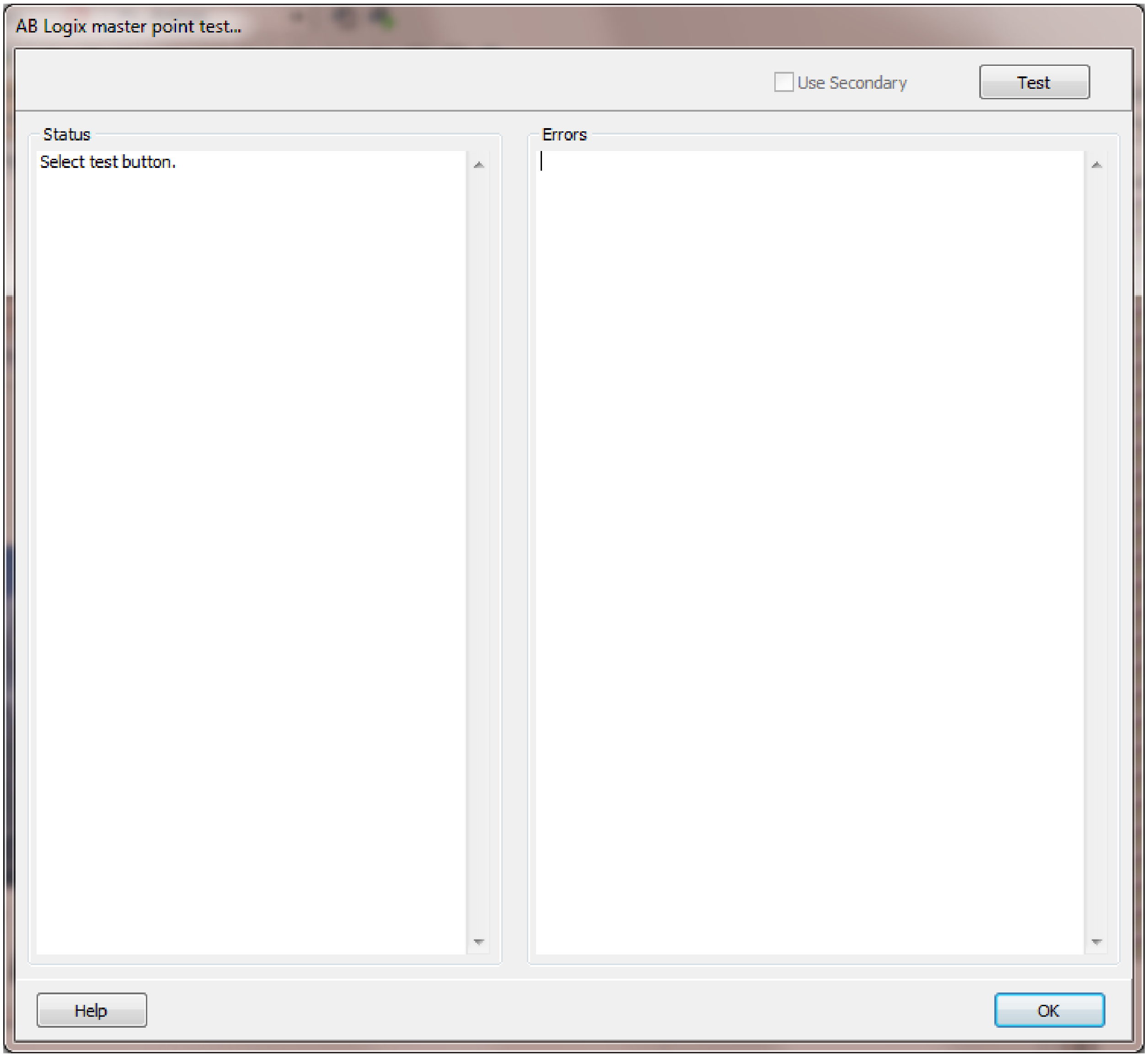
Export

This is used to export the configuration to an Excel worksheet.

Import

This is used to import string configurations from an Excel worksheet. The contents of the grid are completely replaced by the contents of the file.

Points


AB Logix master point test...
☐ Use Secondary
Test
Status
Errors
Help
OK

Select test button.

This feature is used to test if a point or string, with the source address entered, exist in the external device.

Use Secondary

If enabled the secondary port settings will be used.

Test

Selecting this button will execute the test. All the configured points and strings will be tested. The test is very fast.

Note: You can right click and copy the contents of either text area.

Status

This area is to display general information regarding the test and testing progress as well as displaying each point/string success. Each point/string tagname will be displayed with a 'success' suffix if the source address is in the external device.

Example:

```
Connecting...Connected
Session registered
CPU test successful
Point testing begins...
Alarm_Active...
Close_Discharge_Valve_CRT... success
CRT_Acknowledge... success
```

The first four lines are general status updates. The first point 'Alarm_Active', failed and the reason will be displayed in the 'Error' area. (See below) The remaining lines each indicate success.

Error

This area is to display the error that was generated for a source address. Several type of errors are possible. Each point error has three lines. Examples:

```
Tagname: Alarm_Active
Source address: Alarm_Active1
Error: General Status Error:1E

Tagname: Discharge_Value_Close_Timer.ACC
Source address: 1Discharge_Value_Close_Timer.ACC
Error: General Status Error:1E

Tagname: N7[0]
Source address: N7[0]
Error: Point is digital, returned data type is not digital
```

The 'General Status Error:1E' is the most common when a source address does not exist in the external device.

The other error in the example is the point type does not match the data type of the source address. In the above example the point type is digital and the data for the source address is not digital. In this case it was a two byte integer.
Each string type has two lines. Example:

Source address: string1
Error: General Status Error:1E

The string data type is 'structure'. The structure data type covers many different collections of data. If the data type returned is one of the atomic data types, i.e. Boolean, real, etc. an error will be flagged.

Source address

The HMI uses controller tagnames to access controller data. The HMI supports: boolean, small integer (byte), integer, double integer, floats and strings. Arrays and structures (timers, control, etc) are also supported at the structure field level.

There are two special characters. The colon (:) and the period (.). The colon is used to indicate a program name and the period is used to indicate a field name.

Format

The source address must match the controller tagname. If the data type is a simple type then the source address and controller tagname must match exactly.
Examples of possible source address.

Tagname	Source address	Data type
Door_Open	Door_Open	Boolean
Door_Closed	Door_Closed	Boolean
Water_Press	Water_Press	Real
Water_Temp	Water_Temp	Integer
Tank_Level	Tank_Level	String
Open_Time	Open_Time.ACC	Timer (accumulator)
Open_Done	Open_Done.DN	Timer (done)

For access to array elements add the array bounds.

Door_Open	Door_Open[0]	Array[8] of Boolean
Door_Closed	Door_Closed[2]	Array[8] of Boolean

Boolean arrays are grouped into 32 bits. The array index specifies the bit group.
Door_Open[0] is bit 0 to 31
Door_Open[1] is bit 32 to 63
Door_Open[2] is bit 64 to 95

Use a period (.) to specify the bit in the group.

Door_Open[0].0 is group 0 bit 0
Door_Open[0].31 is group 0 bit 31
Door_Open[5].0 is group 5 bit 0
Door_Open[44].2 is group 44 bit 2

Note: When writing a boolean of a boolean array, for example Water_Temp[9].7, the last returned value of the complete 32 bit group, is used to mask the bit and set it true or false.

Water_Press	Water_Press[3]	Array[8] of Real
Water_Temp	Water_Temp[7]	Array[8] of Integer
Open_Time	Open_Time[0].ACC	Array[8] Timer (accumulator)
Open_Done	Open_Done[0].DN	Array[8] Timer (done)

For multi-dimensional arrays.

Door_Open	Door_Open[0,1,2]	Array[8,8,8] of Boolean
Water_Press	Water_Press[3,2]	Array[8,4] of Real

If the tag is in a program, prefix the program name with a colon <programName:>tagname.

First:Door_Open	Door_Open[0]	Array[8] of Boolean
First:Door_Closed	Door_Closed[2]	Array[8] of Boolean
First:Water_Press	Water_Press[3]	Array[8] of Real
First:Water_Temp	Water_Temp[7]	Array[8] of Integer

For access to I/O cards

From Logix5000 Data Access (Rockwell Automation Publication 1756-PM020C-EN-P - June 2012)

However, do not access complete UDT Tags that contain nested system structures. (For example, Module-Defined, Predefined, or Add-On Defined.)

...

Predefined, Module-Defined, and Add-On-Defined structure tags have a more complex set of rules than UDTs, and have a greater potential to change in the future. Do *not* access complete structure tags of these types, or complete UDTs with nested tags of these types.

....

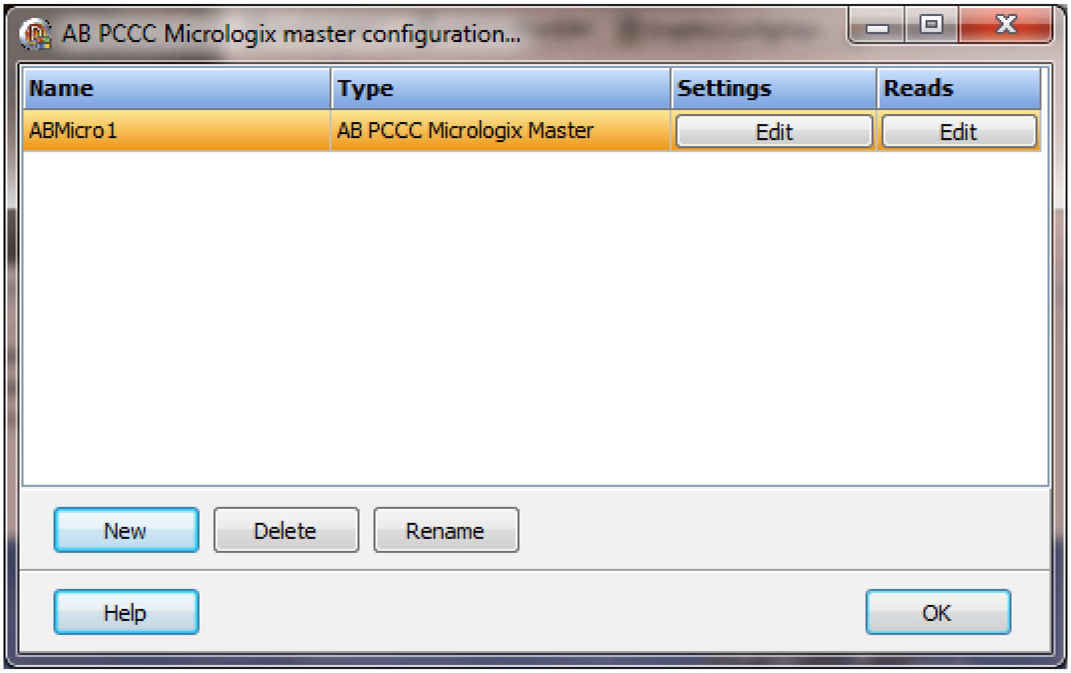
Instead, access atomic members of these tags ... using either *one* of the methods that follow.

- Create an alias of the atomic member and access the alias instead of the structure.
- Create an atomic tag or UDT structure tag with an atomic member, and

then have the user program copy the data to and from the tag or atomic member. Access the new tag or atomic member instead.

AB PCCC MICROLOGIX

Each AB PCCC Micrologix master object is listed in the window.


AB PCCC Micrologix master configuration...
New
Delete
Rename
Help
OK

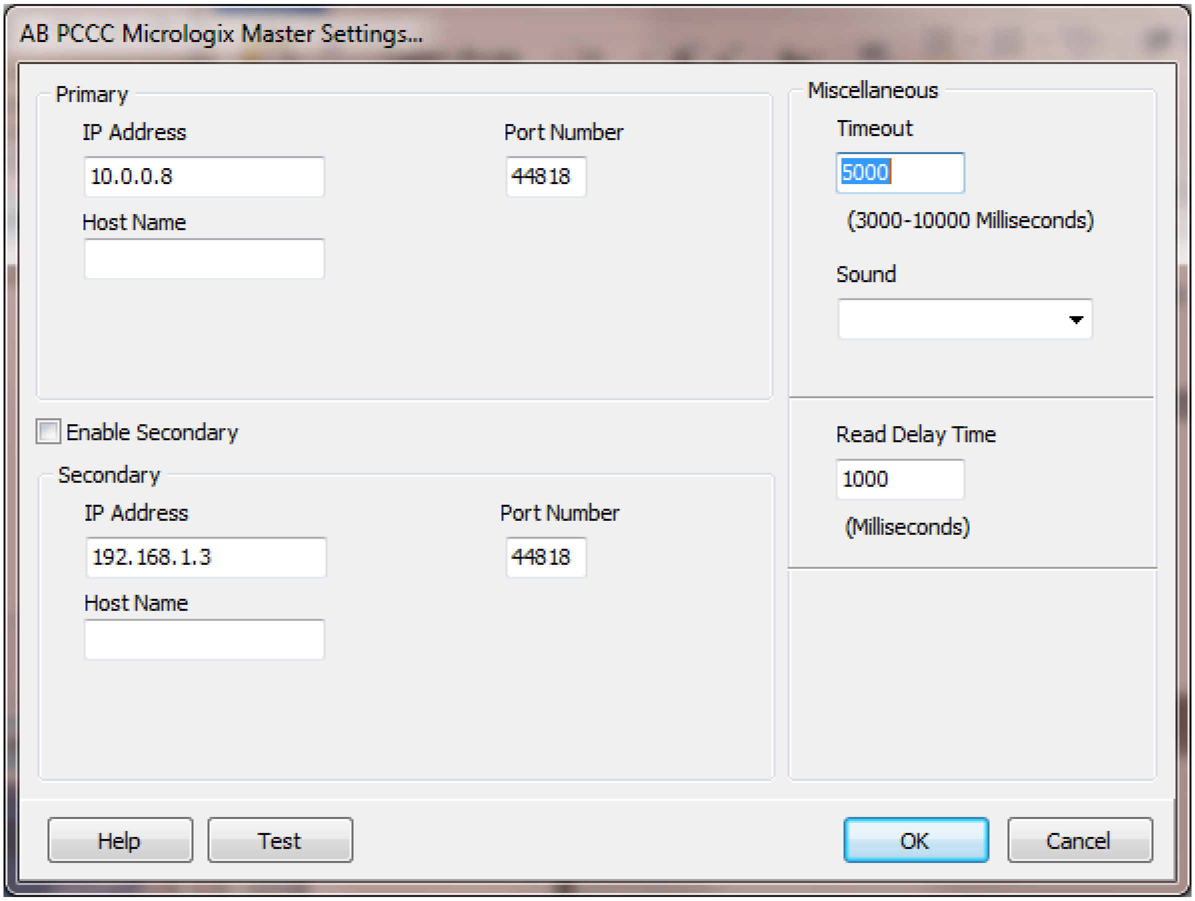
Name	Type	Settings	Reads
ABMicro1	AB PCCC Micrologix Master	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an AB PCCC Micrologix master object select the "Delete" button.

Settings


AB PCCC Micrologix Master Settings...

Primary
IP Address: 10.0.0.8
Port Number: 44818
Host Name:

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

☐ Enable Secondary

Secondary
IP Address: 192.168.1.3
Port Number: 44818
Host Name:

Read Delay Time: 1000
(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

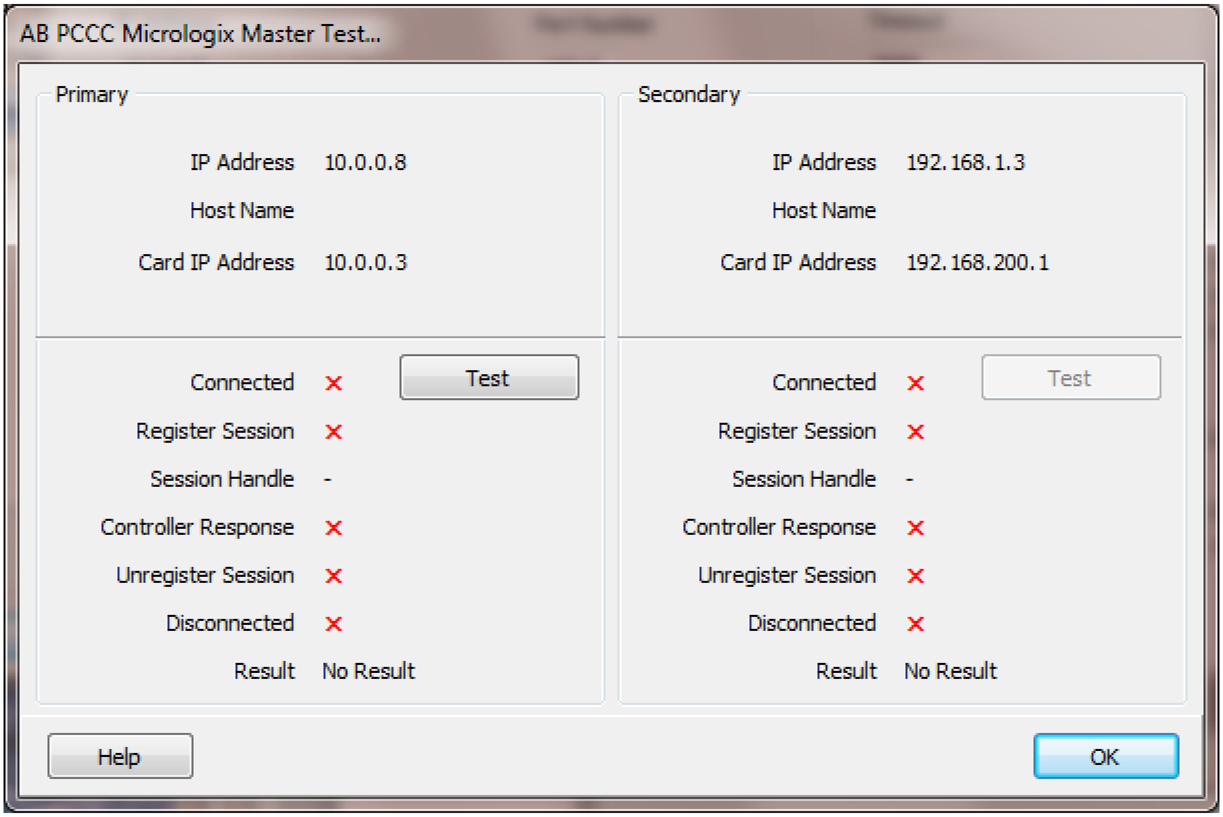
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



AB PCCC Micrologix Master Test...

Primary

IP Address 10.0.0.8
Host Name
Card IP Address 10.0.0.3

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

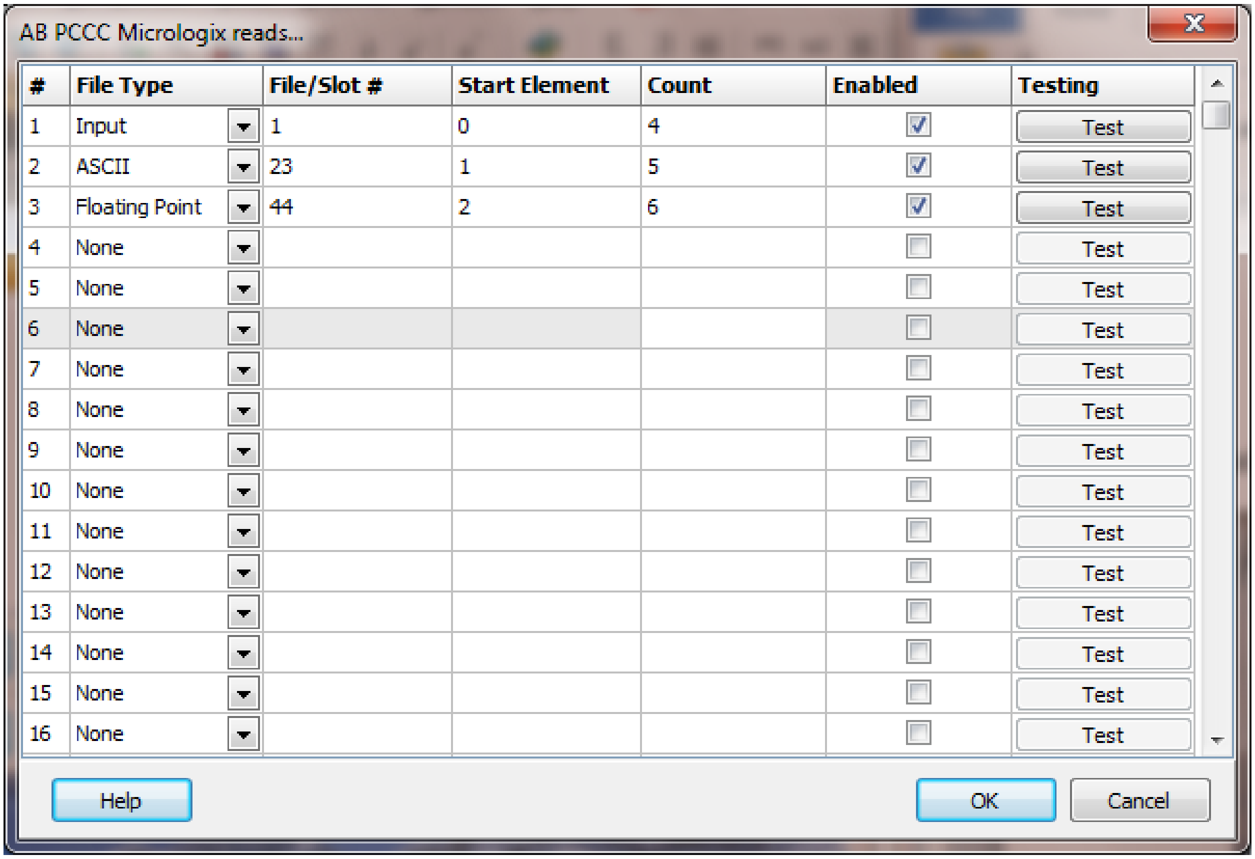
Secondary

IP Address 192.168.1.3
Host Name
Card IP Address 192.168.200.1

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

The program will attempt to connect to the controller, register the session and perform a "Forward Open." Use the reads testing for more verification.

Reads



#	File Type	File/Slot #	Start Element	Count	Enabled	Testing
1	Input	1	0	4	☑	Test
2	ASCII	23	1	5	☑	Test
3	Floating Point	44	2	6	☑	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the AB defined addressing for access to the data files in the PLC. Please refer to the AB documentation.

The DF1 Duplicate Message Detection' logic may be enabled in the communication device. If more than one read command is enabled the detection logic will not cause a problem. If only one read command is enabled the Duplicate Message Detection' logic must be disabled. (Or create another read command)

Common

Example address:

N7:10, N7:451/0, N7:33/15
T4:152/TT,T4:152/EN,T4:152.ACC
B3:45/5
B3/567

I:0.0/00, I:1.1/12, I:4.4/15
O:0.0/01, O:1.0/16, O:8.1/31
The format of the address must be used.
I:X.X/XX

O:X.X/XX
File Type : Slot . Word / Bit

File Type

Example: Integer (N), Input (I), Binary (B)

File/Slot

Legal file numbers are 3 to 255. For inputs and outputs the file number is the slot number.

Start Element

The starting element to read. The different file types have different element counts. Example. Integer (N) has a one word element, Timer (T) has a three word element. This is the starting element for the file type.

Count

The number of elements to read. The file type determines the maximum number of elements that can be read in a single command.

The maximum is 122 words (244 bytes) of data.

Enabled

The read requests are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

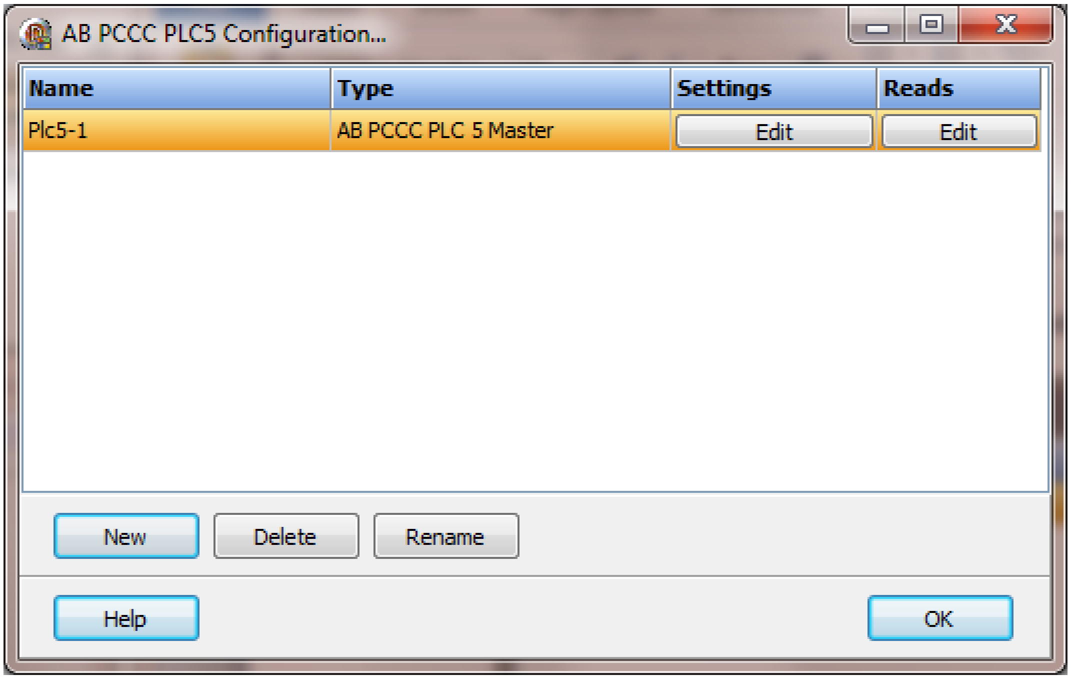
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains 'STS' or 'EXT STS' the text that follows is the error code ,in hexadecimal, returned from the external device. The HMI uses a function code $0F. PCCC, assuming the port test succeeded, if "Forward open success..." is displayed and does not change, close the testing window and reattempt the test.

Error messages

No file type selected	A file type must be selected.
Element out of range	Start element must be: 0-255
Count exceeds limit	The number of elements to read is too high for the file type.
Element start + count exceeds limit	Element start + count greater than file end.
Count < 1	Must read at least one element
File number out of range	The file number must be: 0-255
Invalid file type	The file number does not match the assigned file type.

AB PCCC PLC5

Each AB PCCC PLC5 master object is listed in the window.


AB PCCC PLC5 Configuration...
New
Delete
Rename
Help
OK

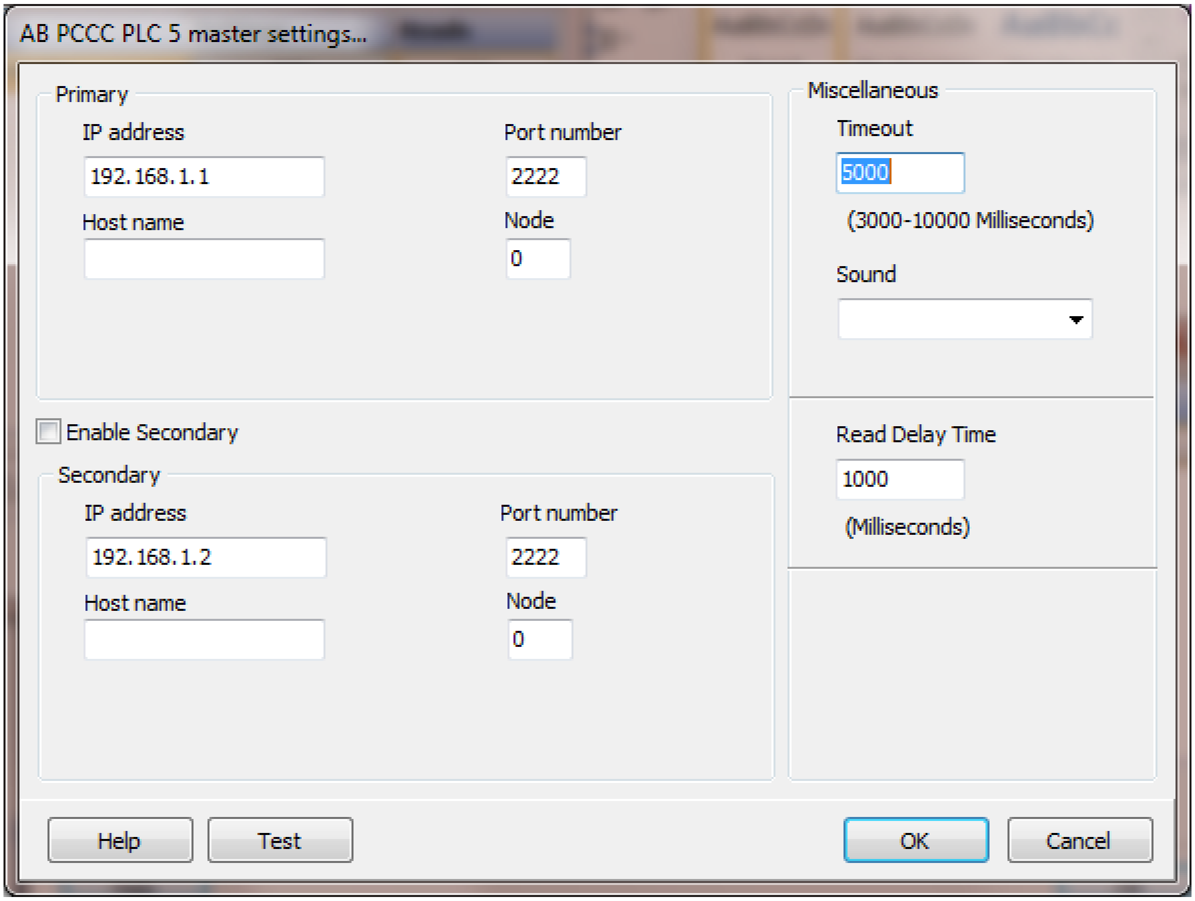
Name	Type	Settings	Reads
Plc5-1	AB PCCC PLC 5 Master	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an AB PCCC PLC5 master object select the "Delete" button.

Settings



Primary

IP address: 192.168.1.1

Host name:

Port number: 2222

Node: 0

☐ Enable Secondary

Secondary

IP address: 192.168.1.2

Host name:

Port number: 2222

Node: 0

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 1000

(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

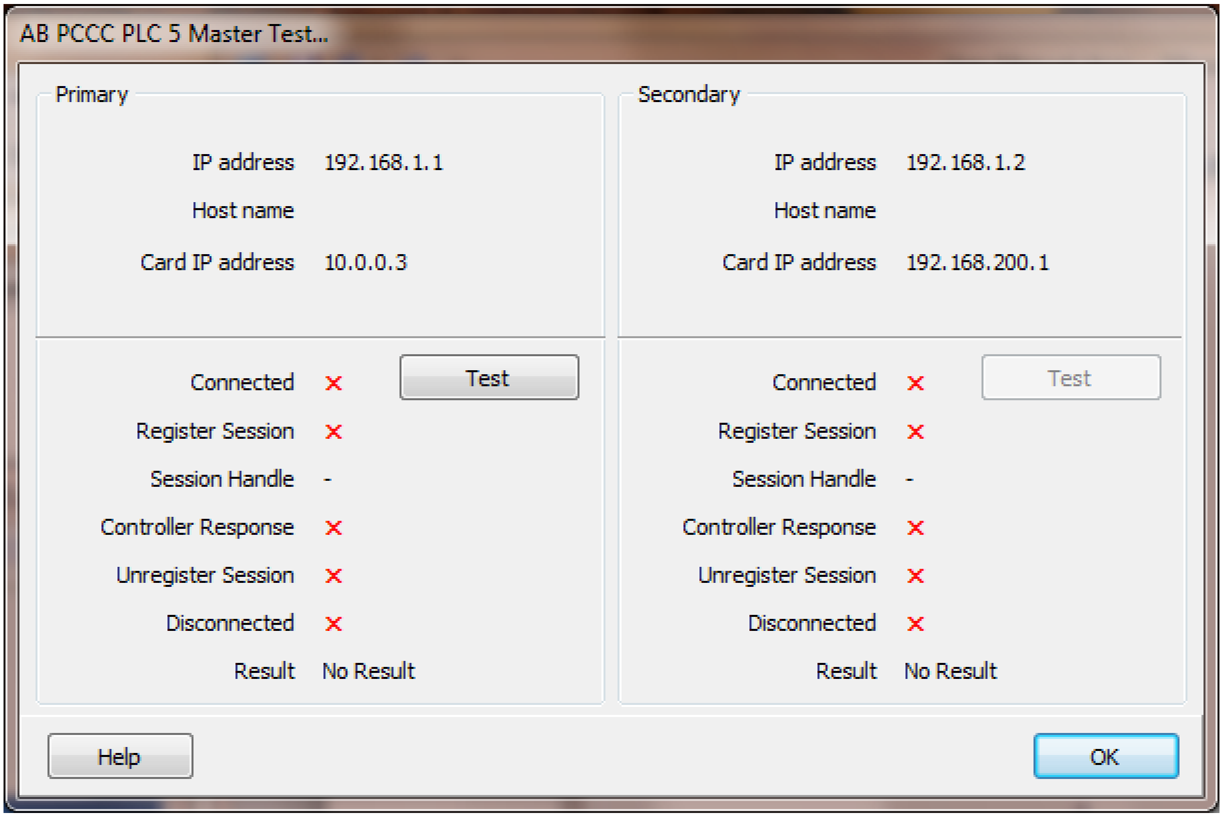
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

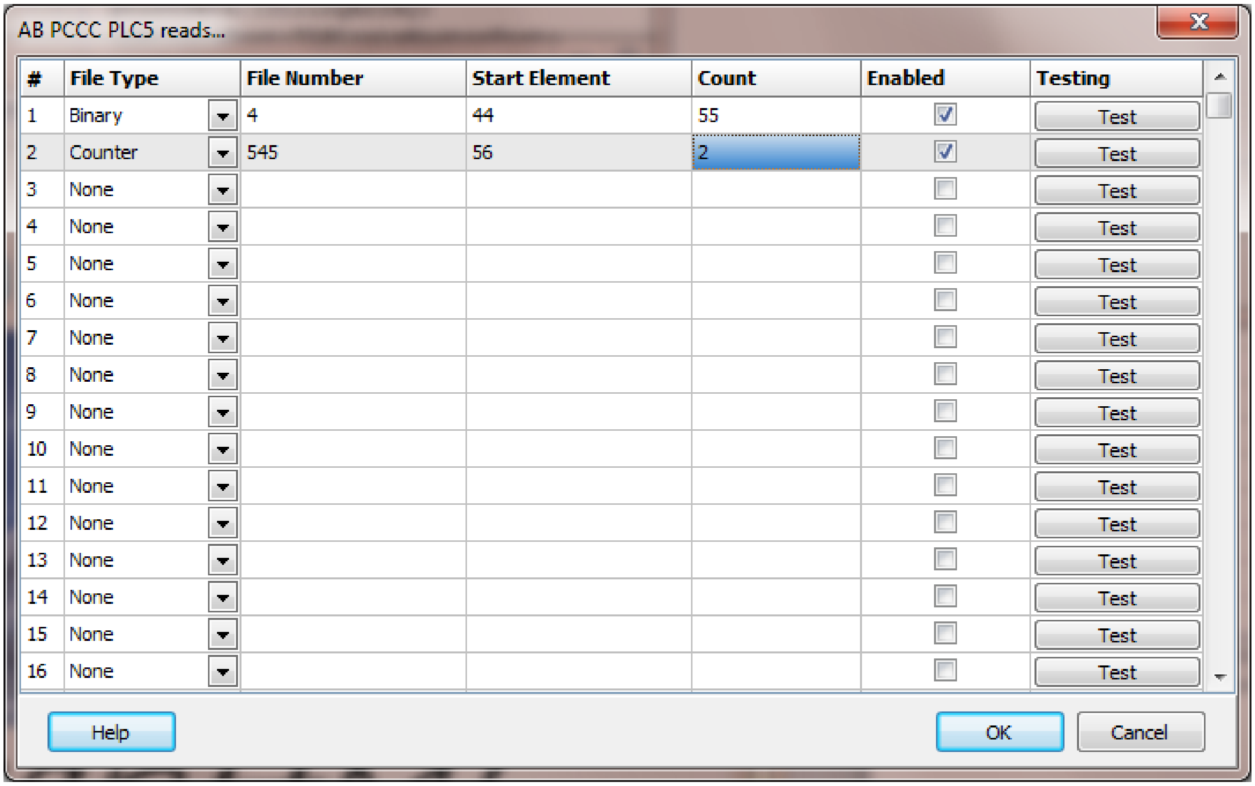
Test button



	Primary	Secondary
IP address	192.168.1.1	192.168.1.2
Host name		
Card IP address	10.0.0.3	192.168.200.1
Connected	✗	✗
Register Session	✗	✗
Session Handle	-	-
Controller Response	✗	✗
Unregister Session	✗	✗
Disconnected	✗	✗
Result	No Result	No Result

The program will attempt to connect to the controller, register the session and perform a "Forward Open." Use the reads testing for more verification.

Reads



AB PCCC PLC5 reads...

#	File Type	File Number	Start Element	Count	Enabled	Testing
1	Binary	4	44	55	☑	Test
2	Counter	545	56	2	☑	Test
3	None				☐	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the AB defined addressing for access to the data files in the PLC. Please refer to the AB documentation.

The DF1 Duplicate Message Detection' logic may be enabled in the communication device. If more than one read command is enabled the detection logic will not cause a problem. If only one read command is enabled the Duplicate Message Detection' logic must be disabled. (Or create another read command)

Common

Example address:

N7:10, N7:451/0, N7:33/15
T4:152/TT,T4:152/EN,T4:152.ACC
B3:45/5
B3/567

I:001/00, I:010/15
O:001/01, O:012/17

Note: Input and output references are in octal for point addressing. The input and output reference must contain the complete address. The value after the colon must be three digits and any bit references must be two digits. Example I:XXX or O:XXX I:001, O:005, I:001/01, O:005/17, I:022/01, O:019/17, I:167/00, O:177/17

File Type

Example: Integer (N), Input (I), Binary (B)

File/Slot

Legal file numbers are 3 to 999. File number 0 is for outputs, file number 1 is for inputs and file number 2 is for status. If the file type is input, output, or status the file number is set to the correct value when the 'OK' button is selected.

Start Element

The starting element to read. The different file types have different element counts. Example. Integer (N) has a one word element, Timer (T) has a three word element. This is the starting element for the file type.

Count

The maximum is 122 words (244 bytes) of data.

Enabled

The read requests are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

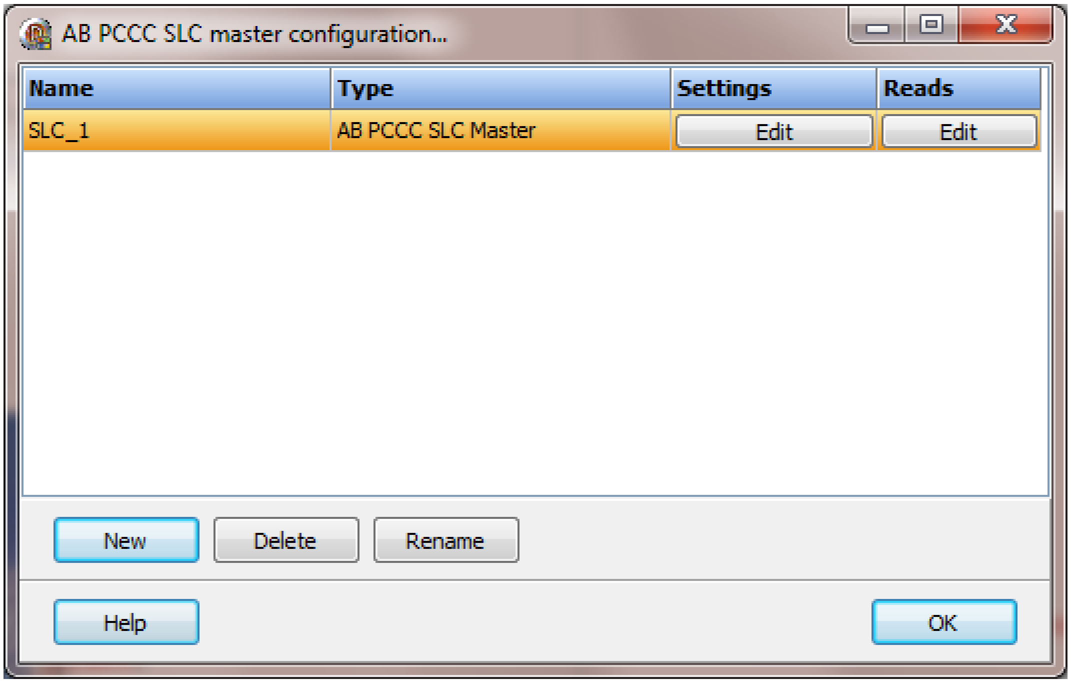
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains 'STS' or 'EXT STS' the text that follows is the error code ,in hexadecimal, returned from the external device. The HMI uses a function code $0F. PCCC, assuming the port test succeeded, if "Forward open success..." is displayed and does not change, close the testing window and reattempt the test.

Error messages

No file type selected	A file type must be selected.
Element out of range	Start element must be: 0-255
Count exceeds limit	The number of elements to read is too high for the file type.
Element start + count exceeds limit	Element start + count greater than file end.
Count < 1	Must read at least one element
File number out of range	The file number must be: 0-255
Invalid file type	The file number does not match the assigned file type.

AB PCCC SLC

Each AB PCCC SLC master object is listed in the window.


AB PCCC SLC master configuration...
New
Delete
Rename
Help
OK

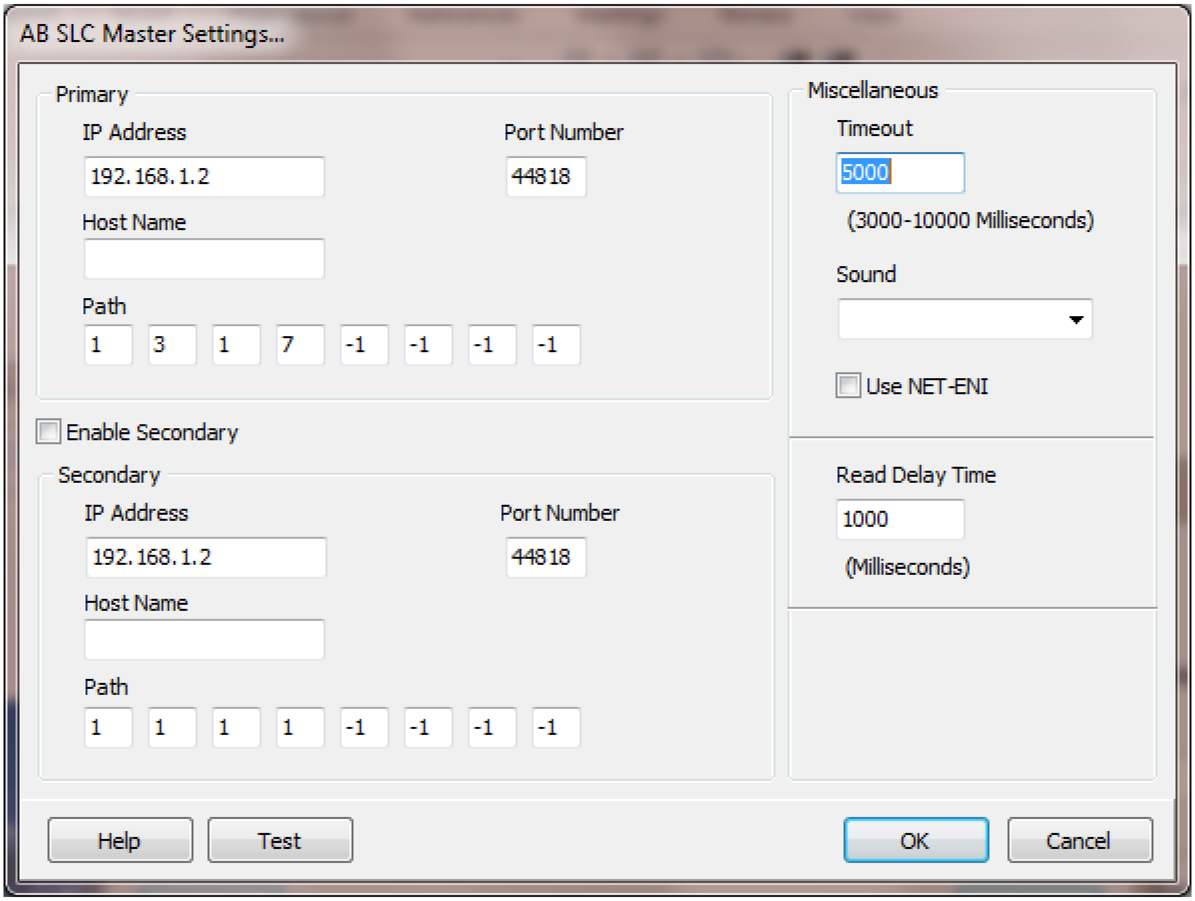
Name	Type	Settings	Reads
SLC_1	AB PCCC SLC Master	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an AB PCCC SLC master object select the "Delete" button.

Settings



IP Address: 192.168.1.2
Port Number: 44818
Host Name:
Path: 1 3 1 7 -1 -1 -1 -1

☐ Enable Secondary

Secondary

IP Address: 192.168.1.2
Port Number: 44818
Host Name:
Path: 1 1 1 1 -1 -1 -1 -1

Timeout: 5000
(3000-10000 Milliseconds)
Sound:
☐ Use NET-ENI
Read Delay Time: 1000
(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Path

Example 1

This is the path to the endpoint (controller). A "-1" value in the path is ignored. The last address in the path is the DH+ node address of the controller. The node address is in octal. Convert the address from octal to decimal and enter that value as the last digit. The testing we did was with a path of four values. We could not discovery a path shorter than four. If you have a path shorter than 4 please contact HMI technical support.

Rack 1

Slot 0 1756-ENET
Slot 1 CPU
Slot 2 16 Point Digital in
Slot 3 1756-DHRIO

Rack 2

Slot 0 SLC 5/04 (DH+ node address octal 37)
Slot 1-n various cards

To access the SLC in rack 2 the path would be: 1 - 3 - 1 - 31 (with -1 in the remaining fields)

1 = Backplane port of 1756-ENET
3 = Slot 3, 1756-DHRIO
1 = Port A of the 1756-DHRIO, use a 2 for port B
31 = SLC 5/04 (31 is the decimal value for DH+ octal address 37)

Note: On the test setup we used the DH+ port on the 1756-DHRIO has pin 1 at the bottom of the connector and on the SLC 5/04 DH+ port has pin 1 at the top of the connector. When port testing a result of "GSE:1" is "Connection failure: A connection related service failed along the connection path."

Example 2

When using a 1761-NET-ENI set all the path values to -1 and enable the "Use NET-ENI" checkbox. The path is not used when using a 1761-NET-ENI.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

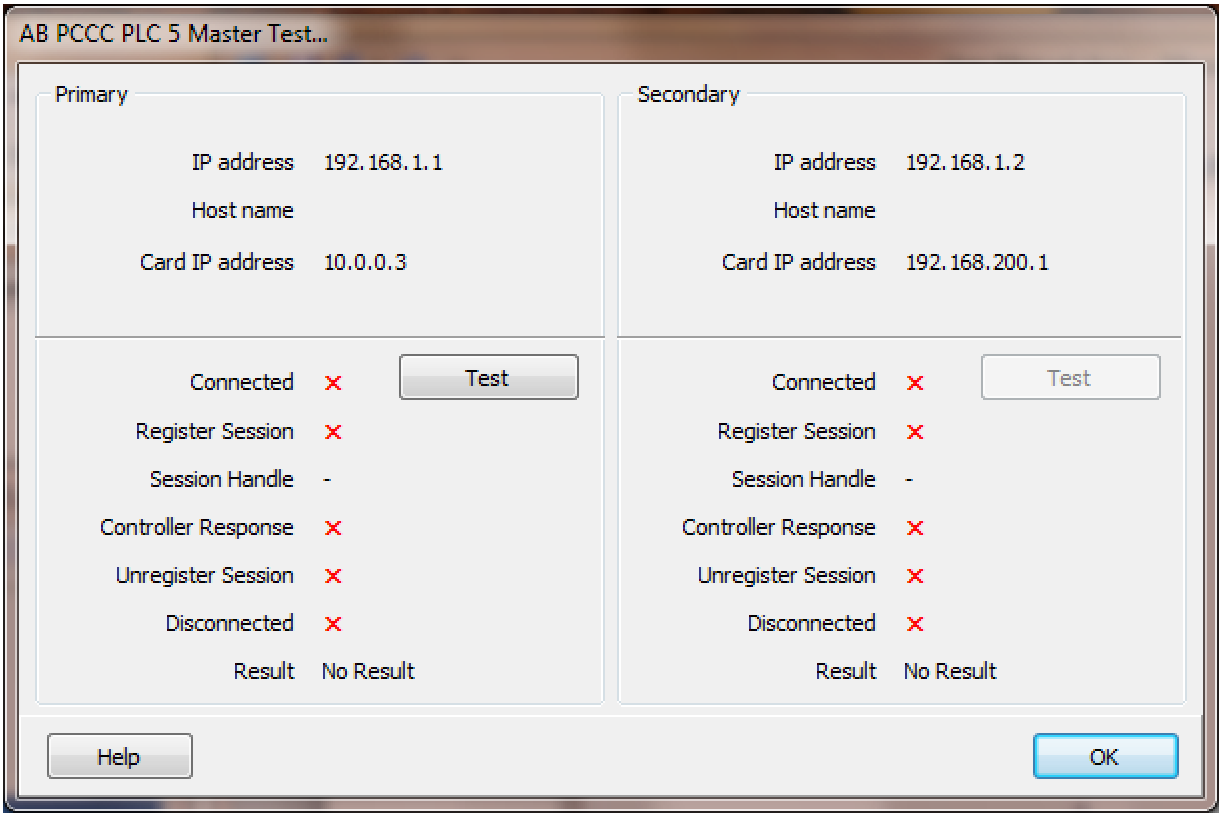
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



Primary

IP address 192.168.1.1
Host name
Card IP address 10.0.0.3

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

Secondary

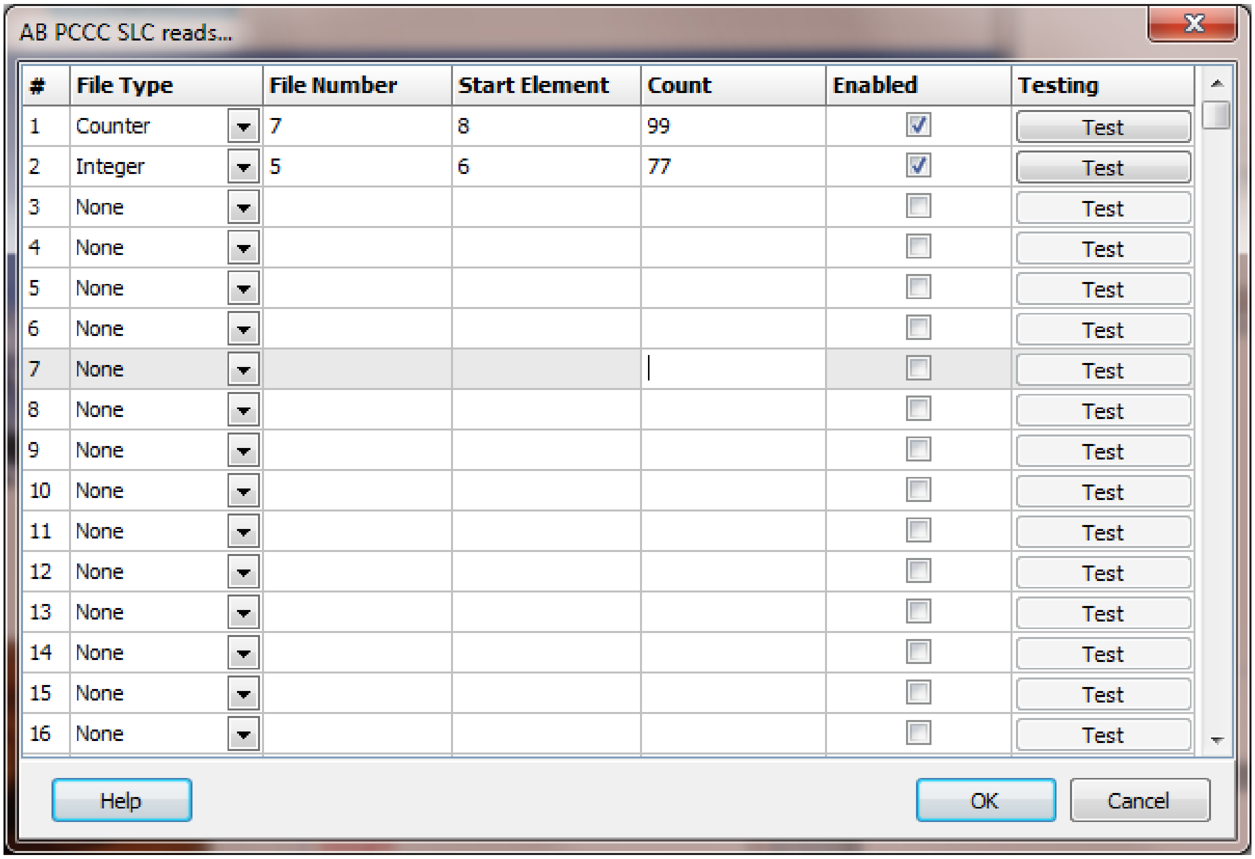
IP address 192.168.1.2
Host name
Card IP address 192.168.200.1

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

The program will attempt to connect to the controller, register the session and perform a "Forward Open." and after a successful "Forward Open" will attempt to read one word from "N7:0." Verify that this address does in exist in the PLC.

Use the “Reads” testing for more verification. Remember, the last value in the path is the decimal node number. DH+ node numbers are in octal. Convert the octal node number to decimal and enter the value as the last value in the path.

Reads



#	File Type	File Number	Start Element	Count	Enabled	Testing
1	Counter	7	8	99	☑	Test
2	Integer	5	6	77	☑	Test
3	None				☐	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the AB defined addressing for access to the data files in the PLC. Please refer to the AB documentation.

The DF1 Duplicate Message Detection' logic may be enabled in the communication device. If more than one read command is enabled the detection logic will not cause a problem. If only one read command is enabled the Duplicate Message Detection' logic must be disabled. (Or create another read command)

Example address:

Common

N7:10, N7:451/0, N7:33/15
T4:152/TT,T4:152/EN,T4:152.ACC
B3:45/5
B3/567

I:1.0/00, I:1.1/12, I:4.4/15
O:2.0/01, O:7.0/16, O:8.1/31

The format of the address must be used.

I:X.X/XX
O:X.X/XX

File Type : Slot . Word / Bit

Note: When configuring reads if the file type is input or output be aware that setting the count greater than the number of words the card supports, may or may not return data (a successful read). In some cases the PLC will return the data for the selected card (slot) and additional cards (slots) up to the count value.

Example:

Slot 1 1746-IA16	1 word
Slot 4 1747-KE	45 words
Slot 5 1746-NI8	8 words
Slot 6 1746-IA16	1 word

A read
Slot = 1
Start element = 0
Count = 45

For this read the PLC will return 45 words of data. The data past the first word I:1.0 is for other cards.
For the HMI point source address and PLC addressing to match, configure one read for each populated slot (if data is needed) and set the count to the number of words the card utilizes.

File Type

Example: Integer (N), Input (I), Binary (B)

File/Slot

Legal file numbers are 3 to 255. For inputs and outputs the file number is the slot number.

Some file numbers are assigned.

#	Type
2	Status
3	Binary
4	Timer
5	Counter
6	Control
7	Integer
8	Floating Point

9-255 User Assigned

If the file type is status the file number is set to the correct value when the 'OK' button is selected.

Start Element

The starting element to read. The different file types have different element counts. Example. Integer (N) has a one word element, Timer (T) has a three word element. This is the starting element for the file type.

Count

For SLC 5/01 or 5/02 = 82 bytes (41 words).
For SLC 5/03 or 5/04 = 236 bytes (118 words).

Example:	Timer (T) 3 words per element. Maximum count is 40.
	Float (F) 2 words per element. Maximum count is 61.

Enabled

The read requests are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

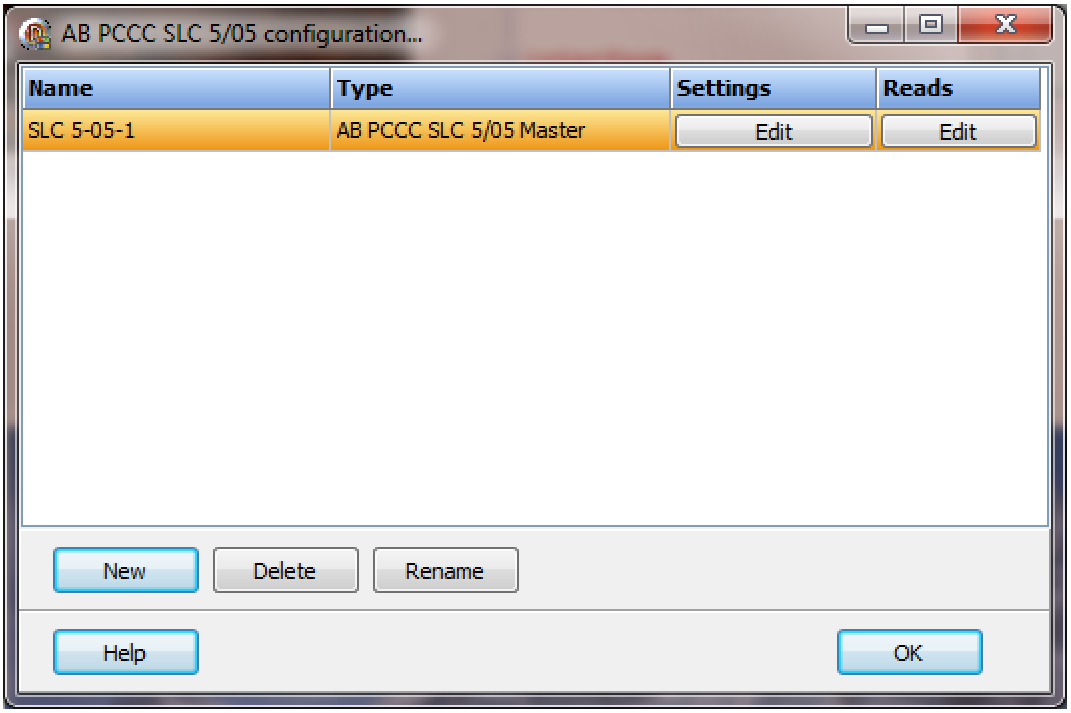
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains 'STS' or 'EXT STS' the text that follows is the error code ,in hexadecimal, returned from the external device. The HMI uses a function code $0F. PCCC, assuming the port test succeeded, if "Forward open success..." is displayed and does not change, close the testing window and reattempt the test.

Error messages

No file type selected	A file type must be selected.
Element out of range	Start element must be: 0-255
Count exceeds limit	The number of elements to read is too high for the file type.
Element start + count exceeds limit	Element start + count greater than file end.
Count < 1	Must read at least one element
File number out of range	The file number must be: 0-255
Invalid file type	The file number does not match the assigned file type.

AB PCCC SLC 5/05

Each AB PCCC SLC 5/05 master object is listed in the window.



AB PCCC SLC 5/05 configuration...
New
Delete
Rename
Help
OK

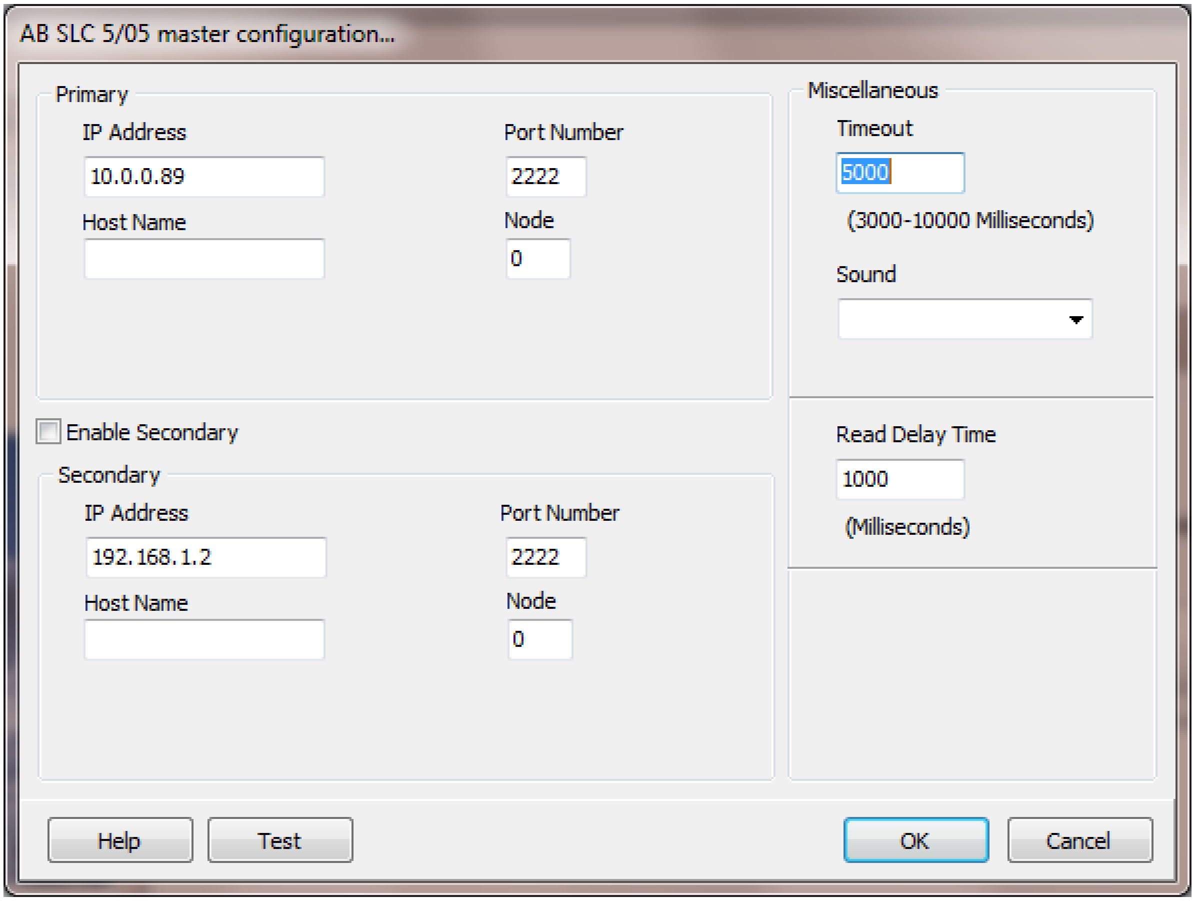
Name	Type	Settings	Reads
SLC 5-05-1	AB PCCC SLC 5/05 Master	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an AB PCCC SLC 5/05 master object select the "Delete" button.

Settings


AB SLC 5/05 master configuration...

Primary

IP Address: 10.0.0.89

Host Name:

Port Number: 2222

Node: 0

☐ Enable Secondary

Secondary

IP Address: 192.168.1.2

Host Name:

Port Number: 2222

Node: 0

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 1000

(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

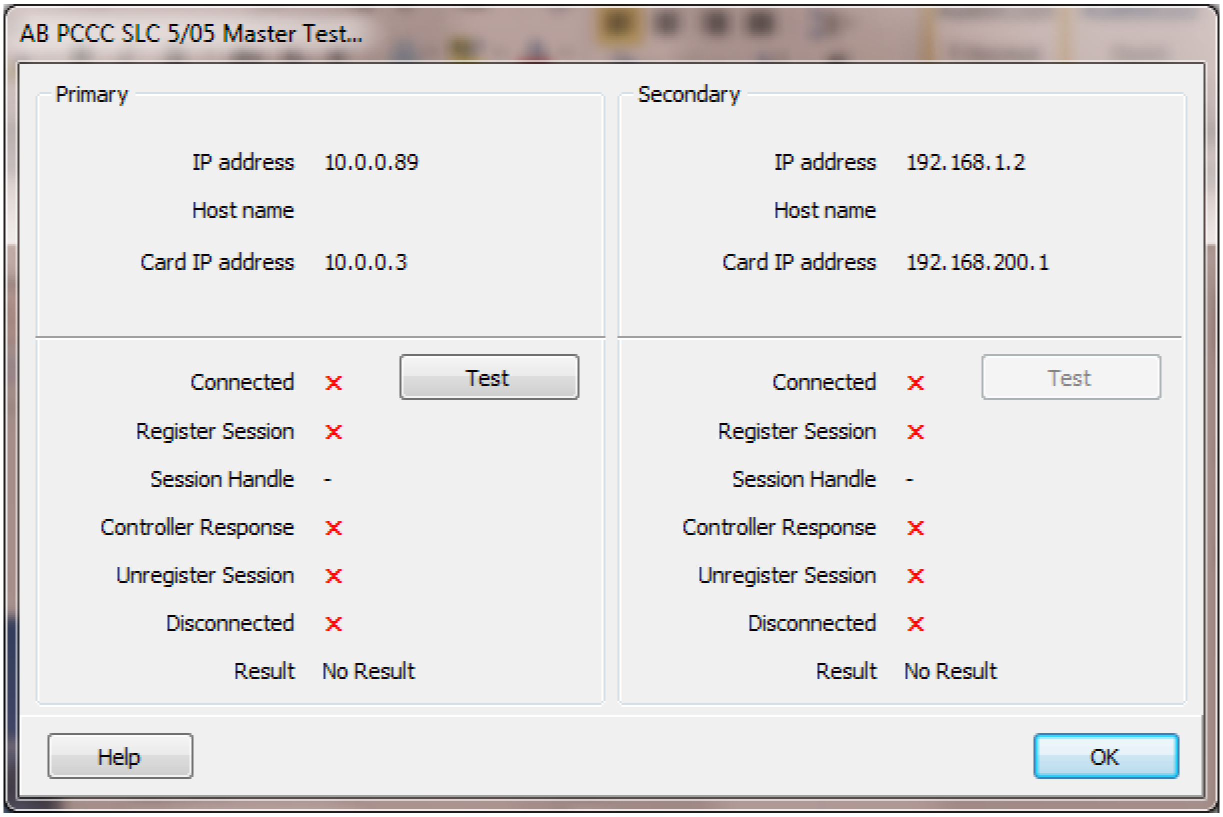
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



AB PCCC SLC 5/05 Master Test...

Primary

IP address 10.0.0.89
Host name
Card IP address 10.0.0.3

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

Secondary

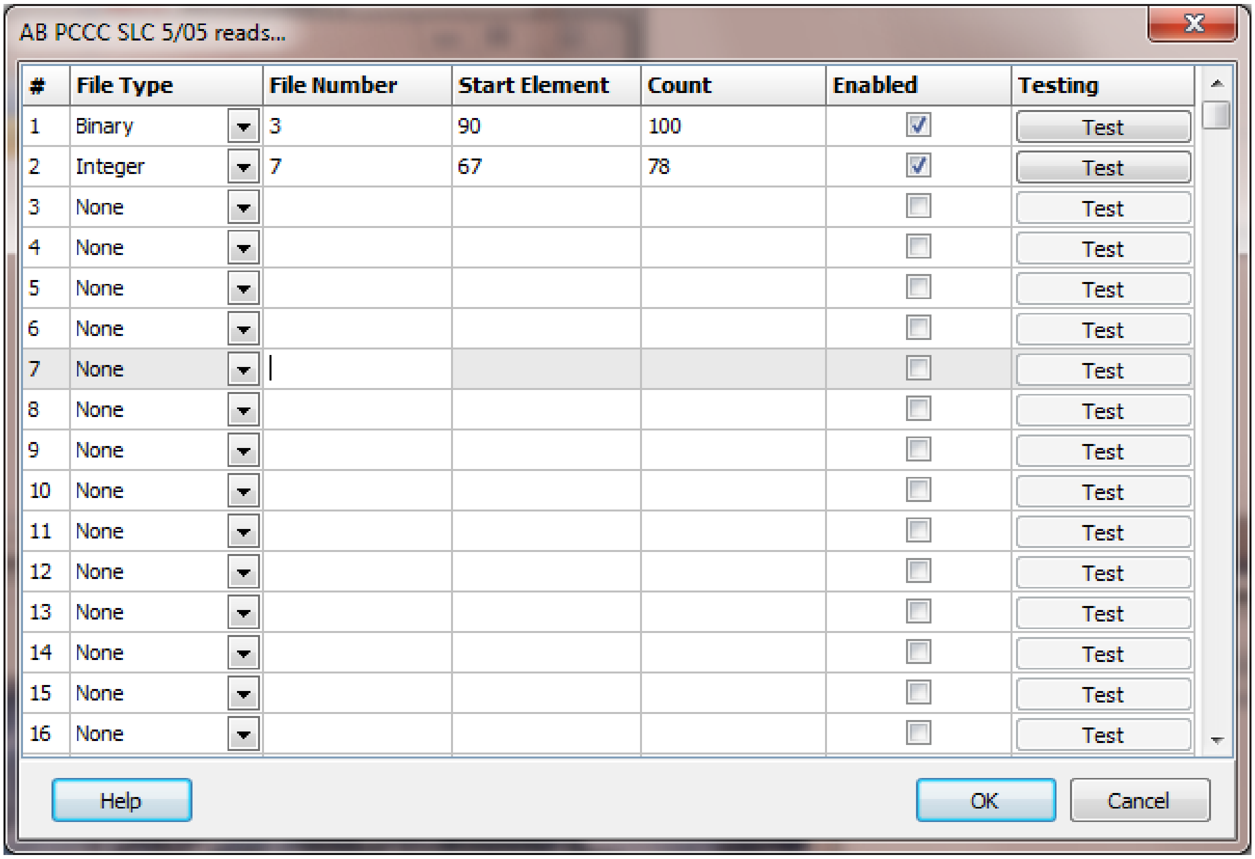
IP address 192.168.1.2
Host name
Card IP address 192.168.200.1

Connected ✗
Register Session ✗
Session Handle -
Controller Response ✗
Unregister Session ✗
Disconnected ✗
Result No Result

The program will attempt to connect to the controller, register the session and will attempt to read one word from "N7:0." Verify that this address does in exist in the PLC.

Use the reads testing for more verification.

Reads



#	File Type	File Number	Start Element	Count	Enabled	Testing
1	Binary	3	90	100	☑	Test
2	Integer	7	67	78	☑	Test
3	None				☐	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the AB defined addressing for access to the data files in the PLC. Please refer to the AB documentation.

The DF1 Duplicate Message Detection' logic may be enabled in the communication device. If more than one read command is enabled the detection logic will not cause a problem. If only one read command is enabled the Duplicate Message Detection' logic must be disabled. (Or create another read command)

Example address:

Common

N7:10, N7:451/0, N7:33/15
T4:152/TT,T4:152/EN,T4:152.ACC
B3:45/5
B3/567

I:1.0/00, I:1.1/12, I:4.4/15
O:2.0/01, O:7.0/16, O:8.1/31

The format of the address must be used.

I:X.X/XX
O:X.X/XX

File Type : Slot . Word / Bit

Note: When configuring reads if the file type is input or output be aware that setting the count greater than the number of words the card supports, may or may not return data (a successful read). In some cases the PLC will return the data for the selected card (slot) and additional cards (slots) up to the count value.

Example:
Slot 1 1746-IA16 1 word
Slot 4 1747-KE 45 words
Slot 5 1746-NI8 8 words
Slot 6 1746-IA16 1 word

A read
Slot = 1
Start element = 0
Count = 45

For this read the PLC will return 45 words of data. The data past the first word I:1.0 is for other cards.
For the HMI point source address and PLC addressing to match, configure one read for each populated slot (if data is needed) and set the count to the number of words the card utilizes.

File Type

Example: Integer (N), Input (I), Binary (B)

File/Slot

Legal file numbers are 3 to 255. For inputs and outputs the file number is the slot number.

Some file numbers are assigned.

#	Type
2	Status
3	Binary
4	Timer
5	Counter
6	Control
7	Integer
8	Floating Point

9-255 User Assigned

If the file type is status the file number is set to the correct value when the 'OK' button is selected.

Start Element

The starting element to read. The different file types have different element counts. Example. Integer (N) has a one word element, Timer (T) has a three word element. This is the starting element for the file type.

Count

For SLC 5/01 or 5/02 = 82 bytes (41 words).
For SLC 5/03 or 5/04 = 236 bytes (118 words).

Example: Timer (T) 3 words per element. Maximum count is 40.
Float (F) 2 words per element. Maximum count is 61.

Enabled

The read requests are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

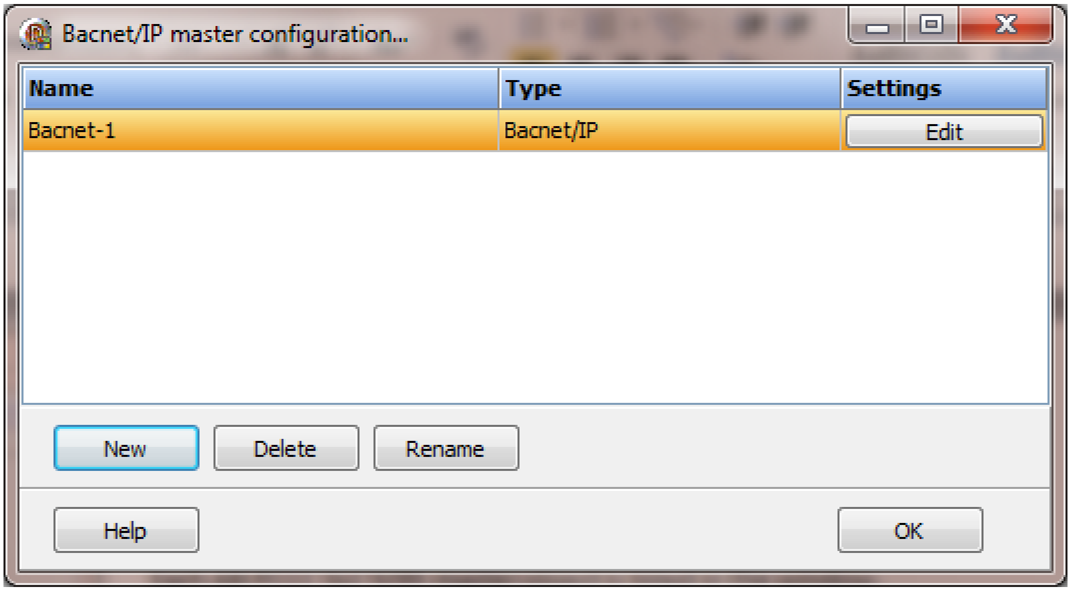
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains 'STS' or 'EXT STS' the text that follows is the error code ,in hexadecimal, returned from the external device. The HMI uses a function code $0F. PCCC, assuming the port test succeeded, if "Forward open success..." is displayed and does not change, close the testing window and reattempt the test.

Error messages

No file type selected	A file type must be selected.
Element out of range	Start element must be: 0-255
Count exceeds limit	The number of elements to read is too high for the file type.
Element start + count exceeds limit	Element start + count greater than file end.
Count < 1	Must read at least one element
File number out of range	The file number must be: 0-255
Invalid file type	The file number does not match the assigned file type.

BACNET/IP

Each Bacnet/IP master object is listed in the window.


Bacnet/IP master configuration...
New
Delete
Rename
Help
OK

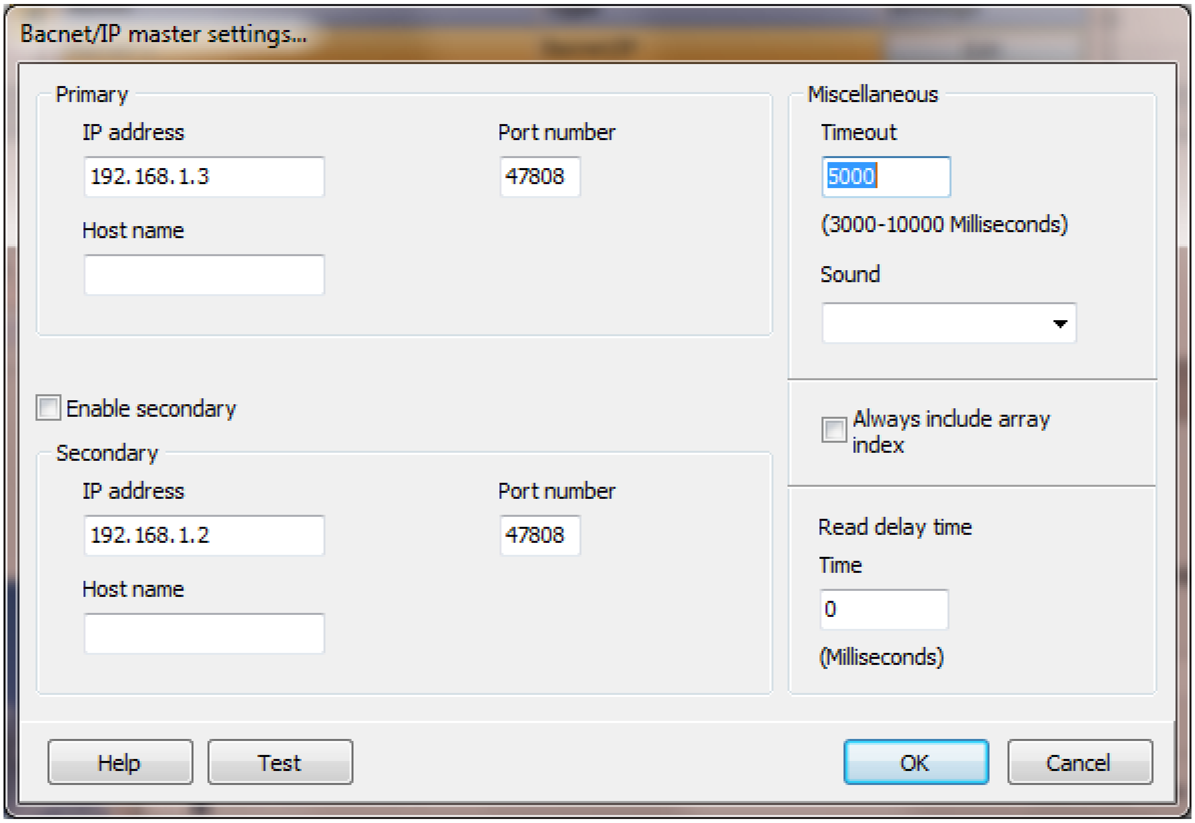
Name	Type	Settings
Bacnet-1	Bacnet/IP	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete a Bacnet/IP master object select the "Delete" button.

Settings



Primary
IP address: 192.168.1.3
Port number: 47808
Host name:

Timeout: 5000
(3000-10000 Milliseconds)
Sound:

☐ Enable secondary

Secondary
IP address: 192.168.1.2
Port number: 47808
Host name:

☐ Always include array index

Read delay time
Time: 0
(Milliseconds)

The port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second path to be used as a hot backup. When in run mode the primary configuration is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary configuration. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary configuration, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary configuration an entry will be made in the event log and operations will return to the primary port.

If the computer has two network interface cards (NIC) the program will use the first one detected for the primary and the second one detected for the secondary. If only one NIC is detected the program will use it for the primary and the secondary.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.
When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Always include array index

Some devices want an array index as part of the packet when it is not needed. When enabled the array index will always be part of the message transmitted (0 default). If it is not enabled the array index will only be transmitted when it is greater than zero (0).

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

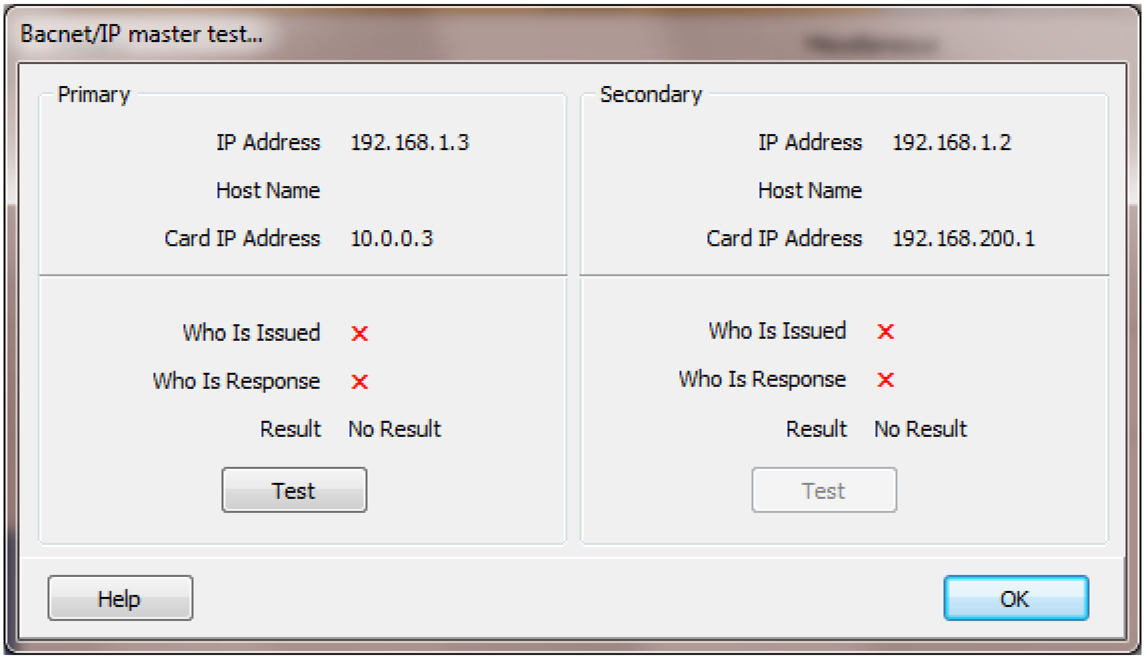
When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button


Bacnet/IP master test...

Primary

IP Address 192.168.1.3

Host Name

Card IP Address 10.0.0.3

Who Is Issued ✗

Who Is Response ✗

Result No Result

Secondary

IP Address 192.168.1.2

Host Name

Card IP Address 192.168.200.1

Who Is Issued ✗

Who Is Response ✗

Result No Result

When the test button is selected the program will issue a "Who-Is" command to the configured host and listen for the "I-Am" response from the client. Most clients broadcast the response so the program "listens" for a broadcast message.

If the connection is the primary it will bind the socket to the first NIC detected.

If the connection is the secondary it will bind the socket to the second NIC if detected. If a second NIC is not installed it will bind the socket to the first NIC detected.

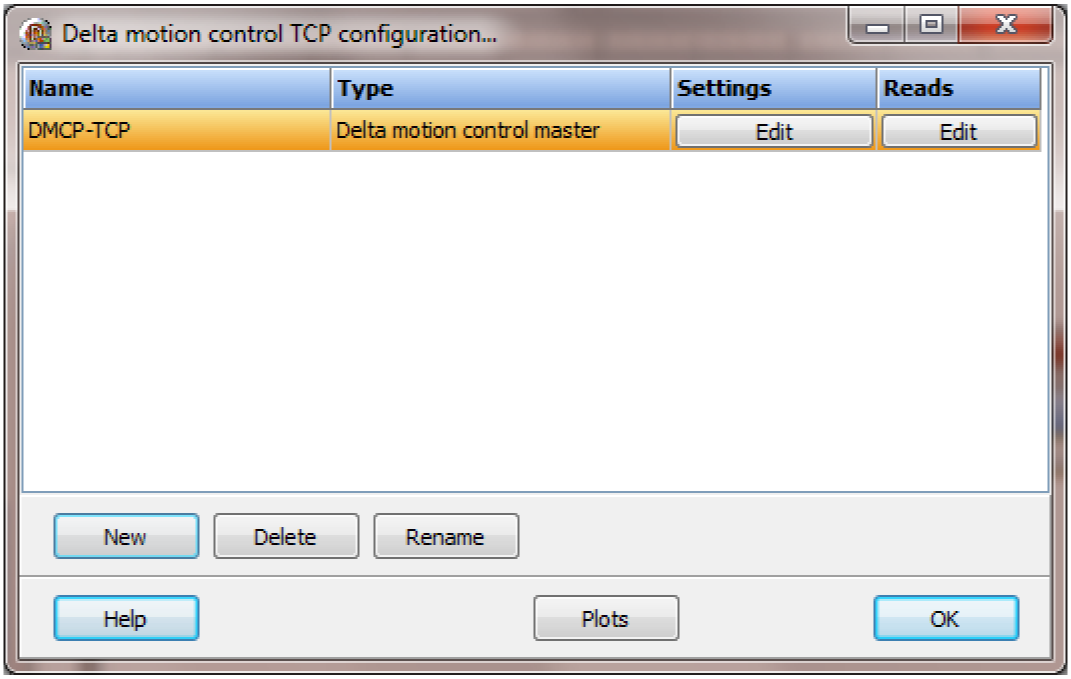
If a "host name" is entered the IP address is ignored.

Note: By design the primary port will attempt to use the first device in the network configuration list and the secondary connection, if enabled, will attempt to use the second device in the network configuration list. Change the list order as desired to get the connection path desired.

If this is not possible or allowing the OS to automatically define the path is desired contact support for directions to disable network port binding.

DELTA MOTION CONTROL TCP

Each DMCP TCP master object is listed in the window.


Delta motion control TCP configuration...
New
Delete
Rename
Help
Plots
OK

Name	Type	Settings	Reads
DMCP-TCP	Delta motion control master	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

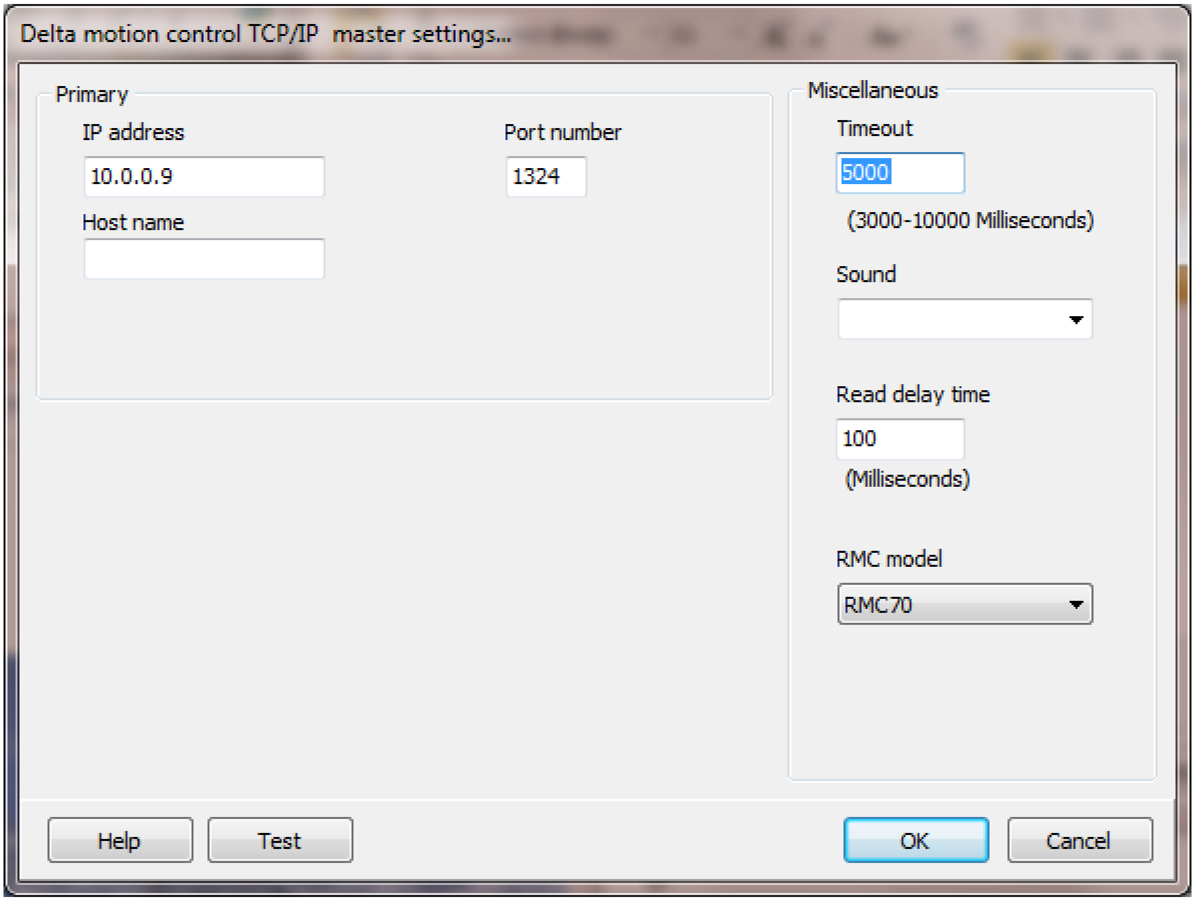
To delete a DMCP TCP master object select the "Delete" button.

Plots

Plots collected from a controller are displayed using a theme. Select this button to manage plot themes.

Plot settings are covered after the DMCP UDP port section.

Settings



Delta motion control TCP/IP master settings...

Primary

IP address: 10.0.0.9

Port number: 1324

Host name:

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read delay time: 100

(Milliseconds)

RMC model: RMC70

If a host name is supplied the IP address is ignored.

Port number

This is the port number used for TCP/UDP communication. The default port number is 1324.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

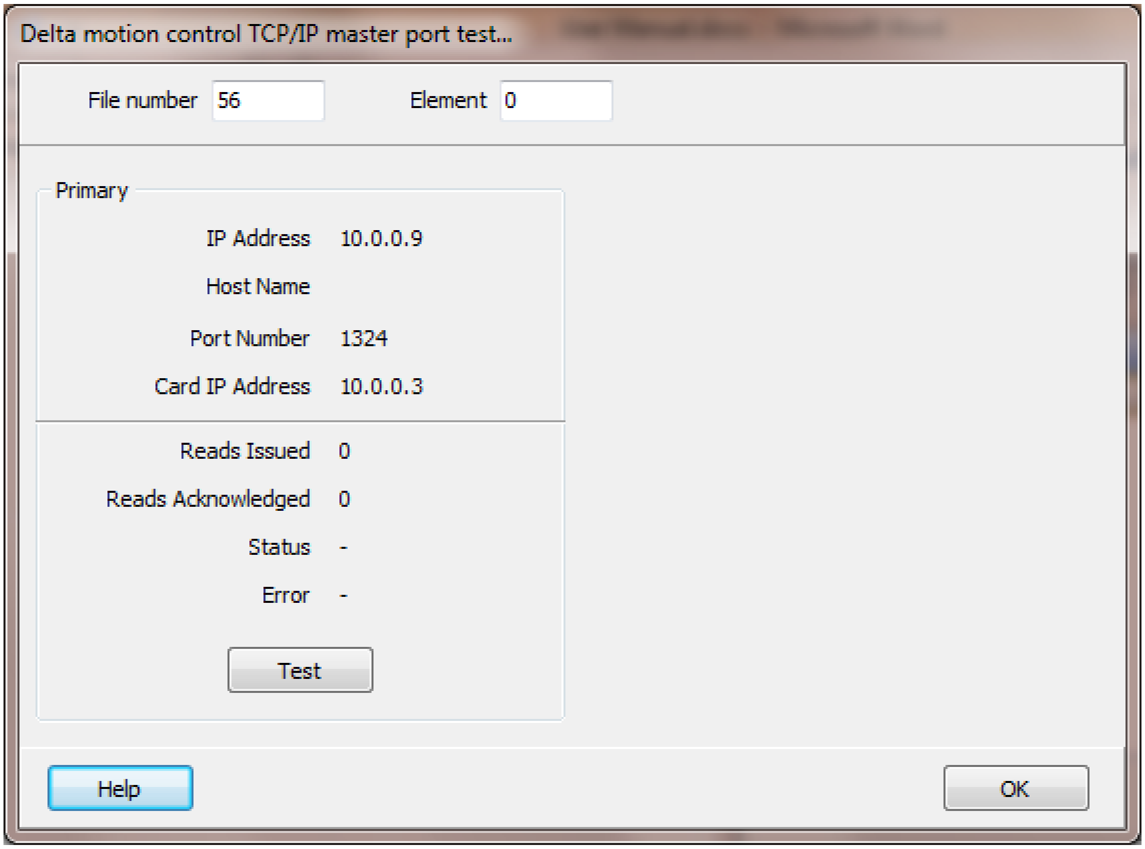
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

RMC model

Select the correct Delta Motion Controller model number.

Test button



Delta motion control TCP/IP master port test...

File number 56

Element 0

Primary

IP Address 10.0.0.9

Host Name

Port Number 1324

Card IP Address 10.0.0.3

Reads Issued 0

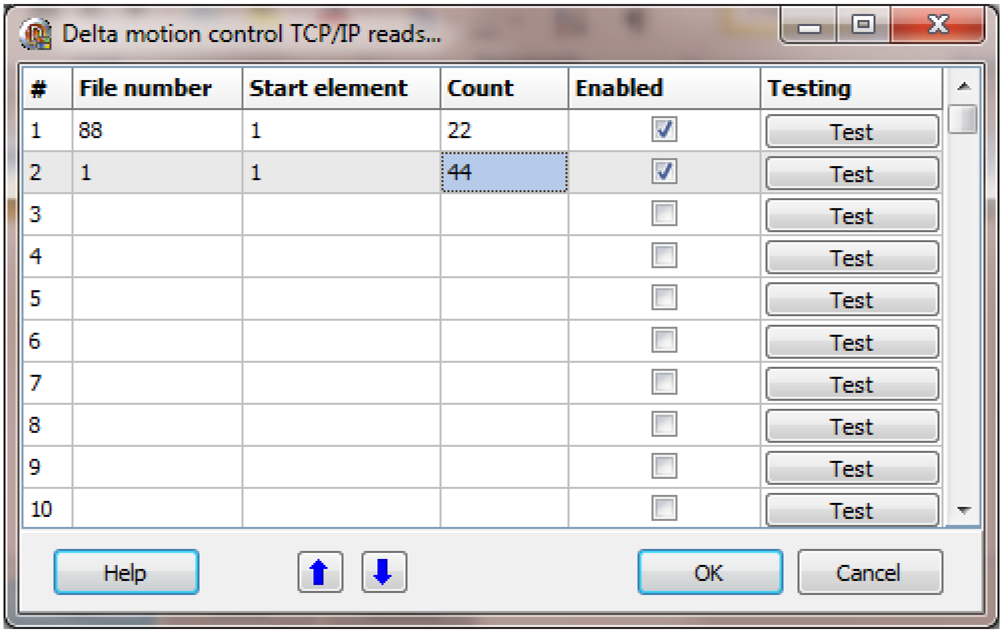
Reads Acknowledged 0

Status -

Error -

When the test button is selected the program will attempt to read one point of data from the device at the address and element entered.

Reads



#	File number	Start element	Count	Enabled	Testing
1	88	1	22	☑	Test
2	1	1	44	☑	Test
3				☐	Test
4				☐	Test
5				☐	Test
6				☐	Test
7				☐	Test
8				☐	Test
9				☐	Test
10				☐	Test

The address ranges shown may or may not be present in the device.

Registers

Address Examples

7.4, 5.90

58.8.6 file 58 element 8 bit 6

Note:

1) DMCP does not provide a function for single bit writes to a register. A bit set write will set the desired bit and clear all other bits in the register. A bit reset will clear the register.

2) If the HMI will be used to collect plots from the controller do not configure any read to access the "Dynamic Plot Upload" files/registers. The HMI uses "Method 2: Read a Captured Plot - Advanced" to collect the plot from the controller. Any read configured to access these file/registers will interfere with the handshaking required to collect plots from the controller.

File number

This is the file number in the device.

Start element

This is the start element value for the read. Each line is one read from the HMI to the device requesting data from the device.

Count

This is the number of 32 bit registers to return. For TCP the limit is 1024, for UDP the limit is 256.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

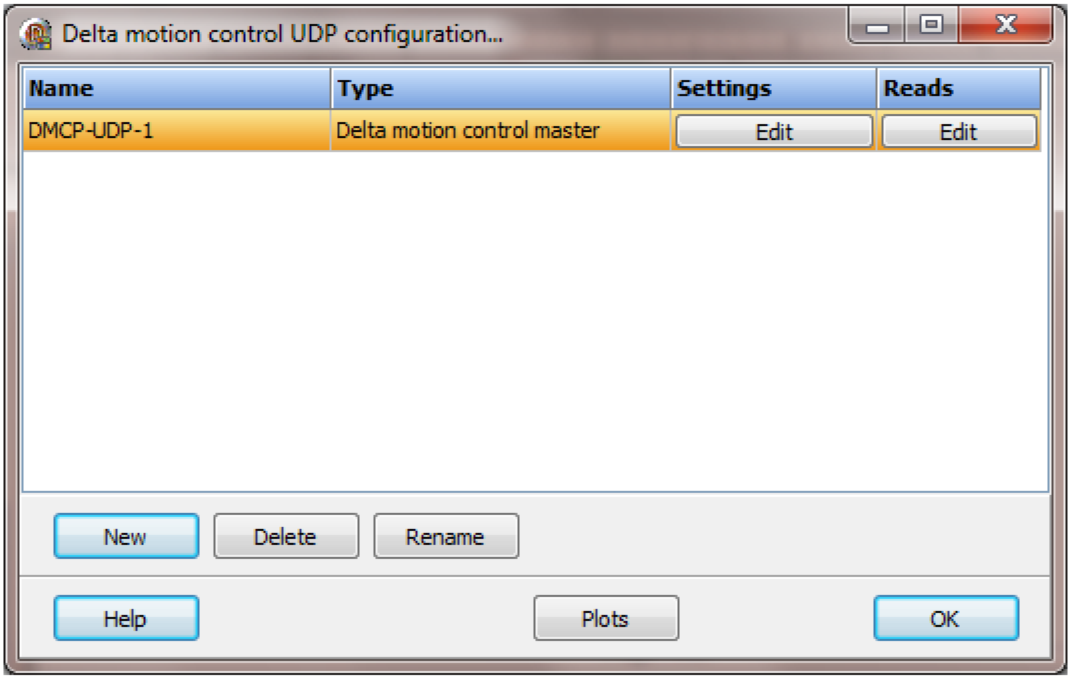
When the button is selected the program will attempt to access the data in the device using the communication parameters configured.

Error messages

Start out of range	The value is out of range for the type.
Count exceeds limit	The count must be 1024 or less for TCP and 256 or less for UDP.
Start + count exceeds register limit	The register plus the count exceeds the maximum address range.
Count < 1	The line must read at least one register.

DELTA MOTION CONTROL UDP

Each DMCP UDP master object is listed in the window.


Delta motion control UDP configuration...
Name
Type
Settings
Reads
DMCP-UDP-1
Delta motion control master
Edit
Edit
New
Delete
Rename
Help
Plots
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

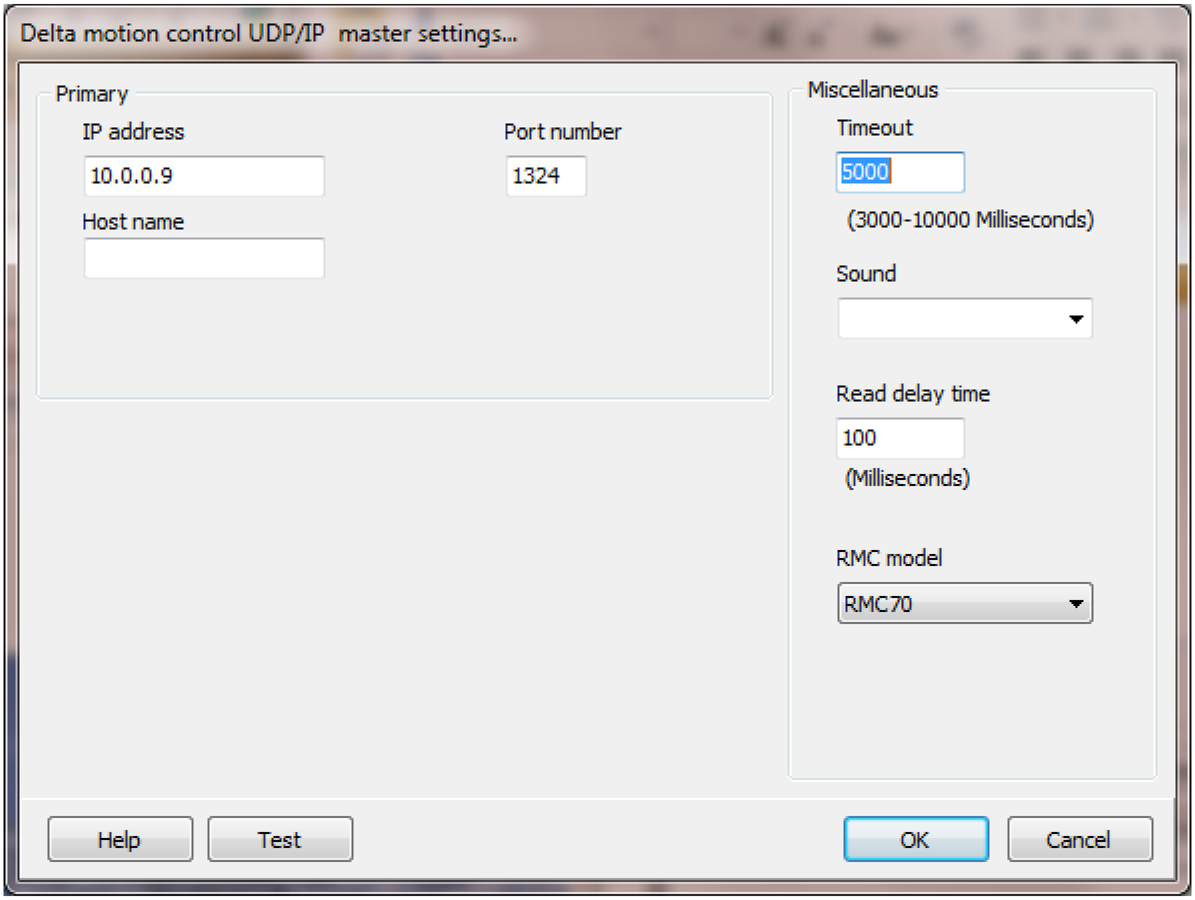
To delete a DMCP TCP master object select the "Delete" button.

Plots

Plots collected from a controller are displayed using a theme. Select this button to manage plot themes.

Plot settings are covered at the end of this section.

Settings



Delta motion control UDP/IP master settings...

Primary

IP address: 10.0.0.9

Port number: 1324

Host name:

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read delay time: 100

(Milliseconds)

RMC model: RMC70

If a host name is supplied the IP address is ignored.

Port number

This is the port number used for TCP/UDP communication. The default port number is 1324.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

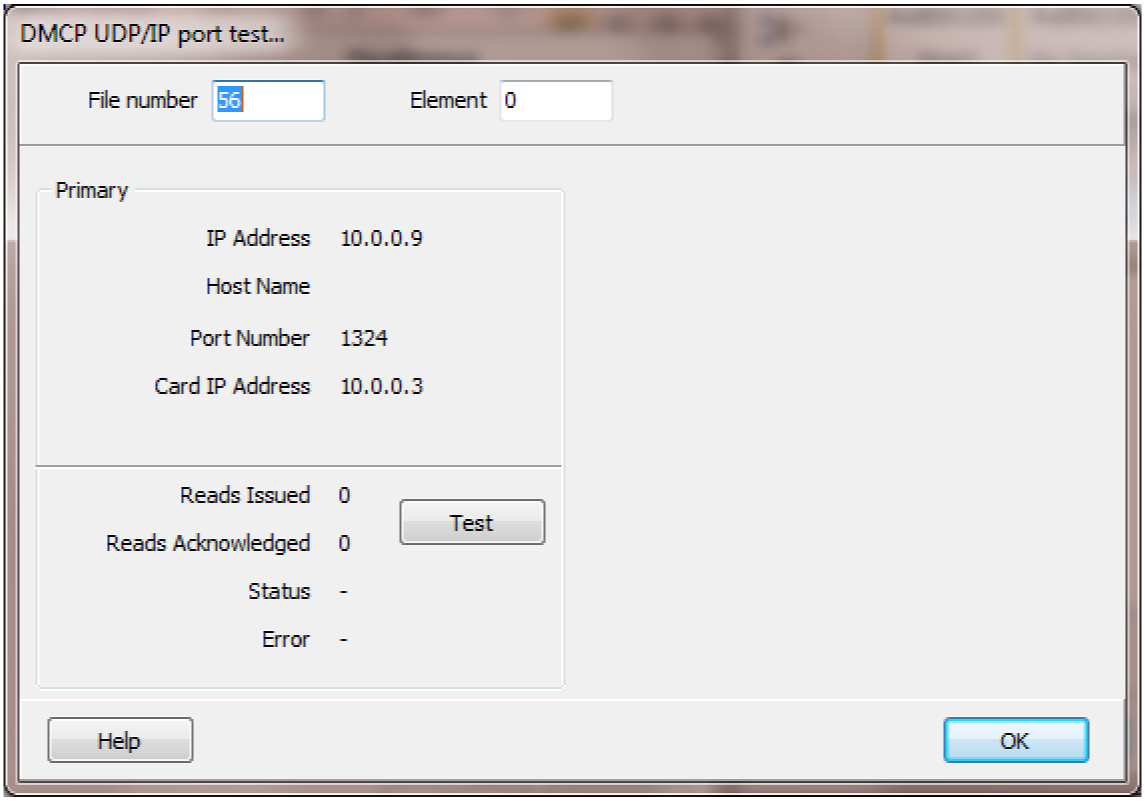
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

RMC model

Select the correct Delta Motion Controller model number.

Test button


DMCP UDP/IP port test...

File number 56

Element 0

Primary

IP Address 10.0.0.9

Host Name

Port Number 1324

Card IP Address 10.0.0.3

Reads Issued 0

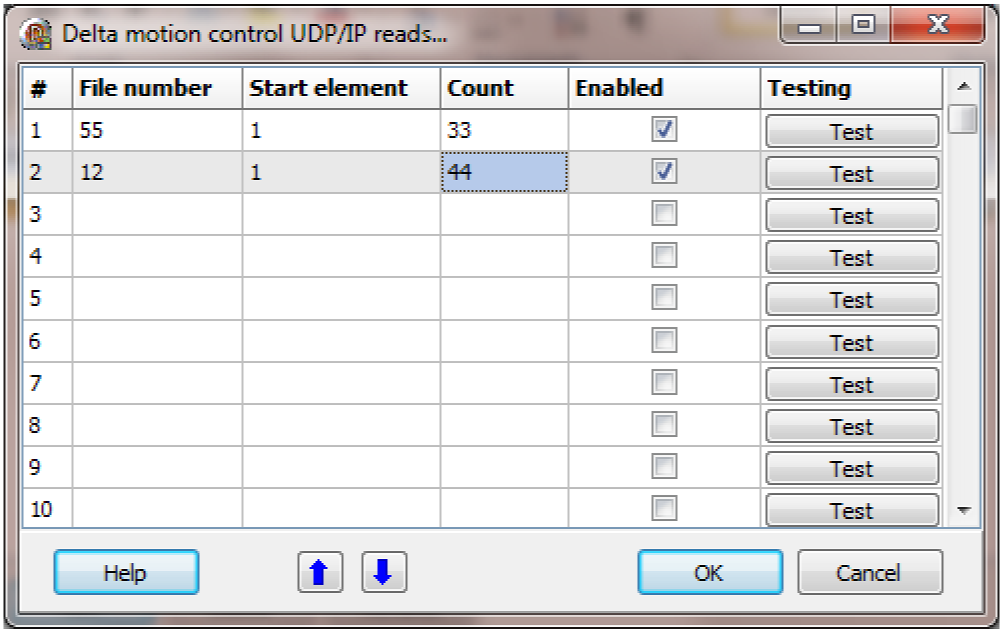
Reads Acknowledged 0

Status -

Error -

When the test button is selected the program will attempt to read one point of data from the device at the address and element entered.

Reads



#	File number	Start element	Count	Enabled	Testing
1	55	1	33	☑	Test
2	12	1	44	☑	Test
3				☐	Test
4				☐	Test
5				☐	Test
6				☐	Test
7				☐	Test
8				☐	Test
9				☐	Test
10				☐	Test

The address ranges shown may or may not be present in the device.

Registers

Address Examples

7.4, 5.90
58.8.6 file 58 element 8 bit 6

Notes:

1) DMCP does not provide a function for single bit writes to a register. A bit set write will set the desired bit and clear all other bits in the register. A bit reset will clear the register.

2) If the HMI will be used to collect plots from the controller do not configure any read to access the "Dynamic Plot Upload" files/registers. The HMI uses "Method 2: Read a Captured Plot - Advanced" to collect the plot from the controller. Any read configured to access these file/registers will interfere with the handshaking required to collect plots from the controller.

File number

This is the file number in the device.

Start element

This is the start element value for the read. Each line is one read from the HMI to the device requesting data from the device.

Count

This is the number of 32 bit registers to return. For TCP the limit is 1024, for UDP the limit is 256.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

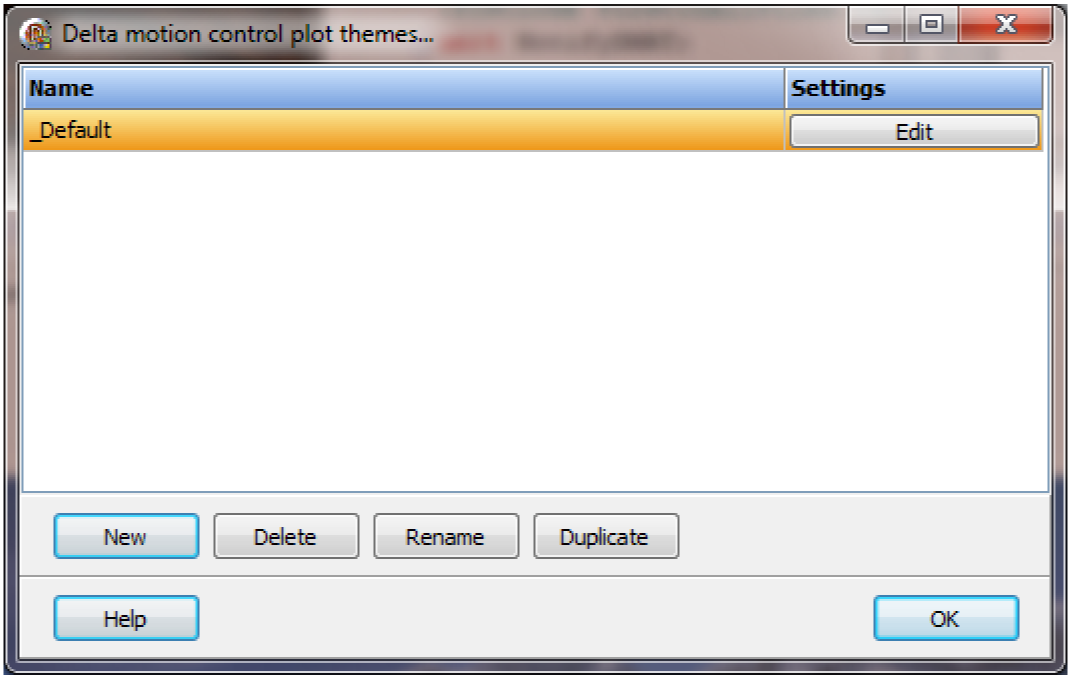
Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured.

Error messages

Start out of range	The value is out of range for the type.
Count exceeds limit	The count must be 1024 or less for TCP and 256 or less for UDP.
Start + count exceeds register limit	The register plus the count exceeds the maximum address range.
Count < 1	The line must read at least one register.

DMCP Plots


Delta motion control plot themes...
Name
Settings
_Default
Edit
New
Delete
Rename
Duplicate
Help
OK

Each DMCP Plot theme defines how a plot will appear.

To create a new theme select the "New" button and enter a name. Each name must be unique.

To rename a theme select the "Rename" button and supply a new name.

To delete a theme select the "Delete" button.

Notes:

A theme named "_Default" is always present and cannot be renamed or deleted.

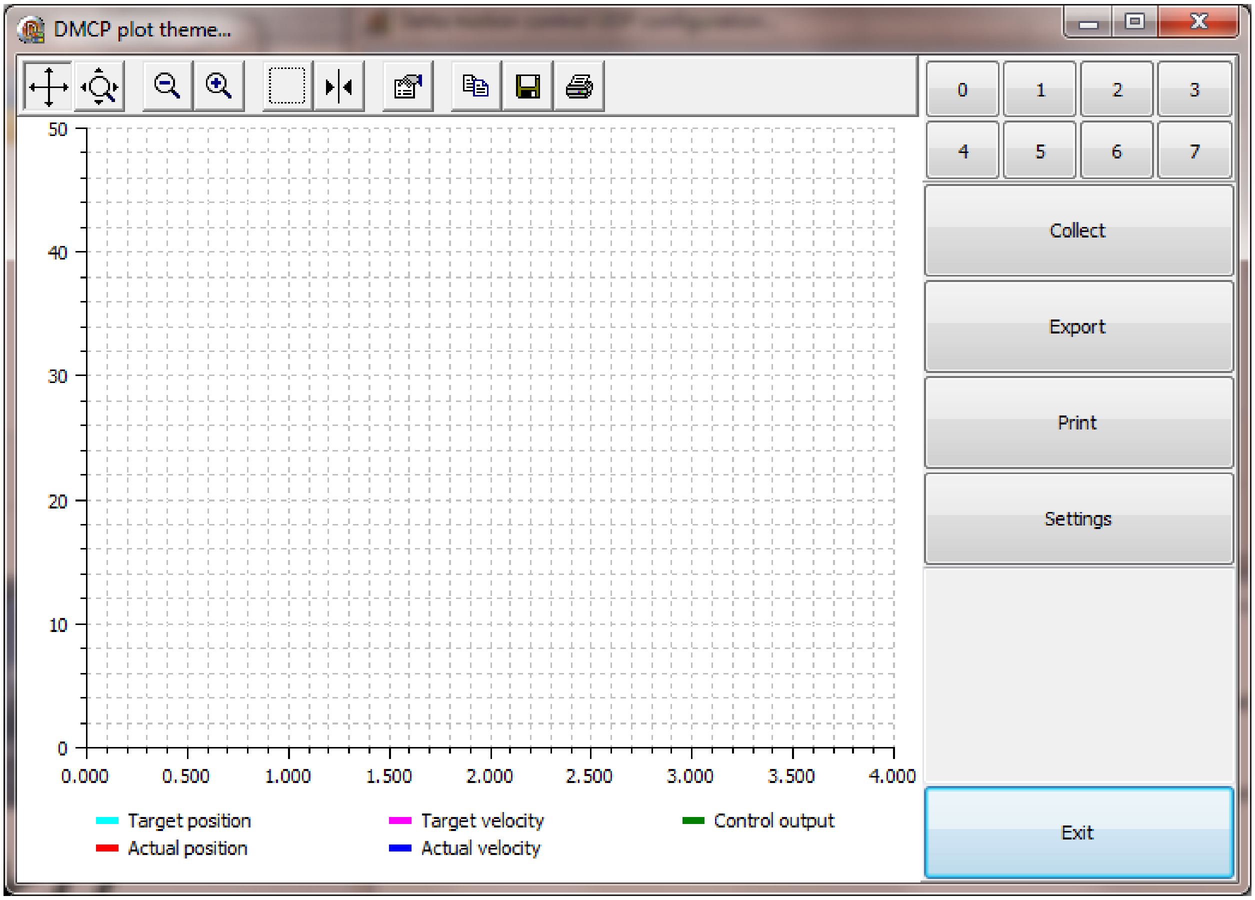
The theme can be changed.

To revert to the original settings, delete the "_Default" theme and it will be recreated with the default settings.

Select the "Edit" button to edit the theme.

At runtime the area between the "Print" button and the "Exit" button is a status area. It will contain information about the plot or other data about the plot/controller.

Settings


DMCP plot theme...
50
40
30
20
10
0
0.000
0.500
1.000
1.500
2.000
2.500
3.000
3.500
4.000
Target position
Actual position
Target velocity
Actual velocity
Control output
0
1
2
3
4
5
6
7
Collect
Export
Print
Settings
Exit

Collect

This will collect the plot from the controller.

Export

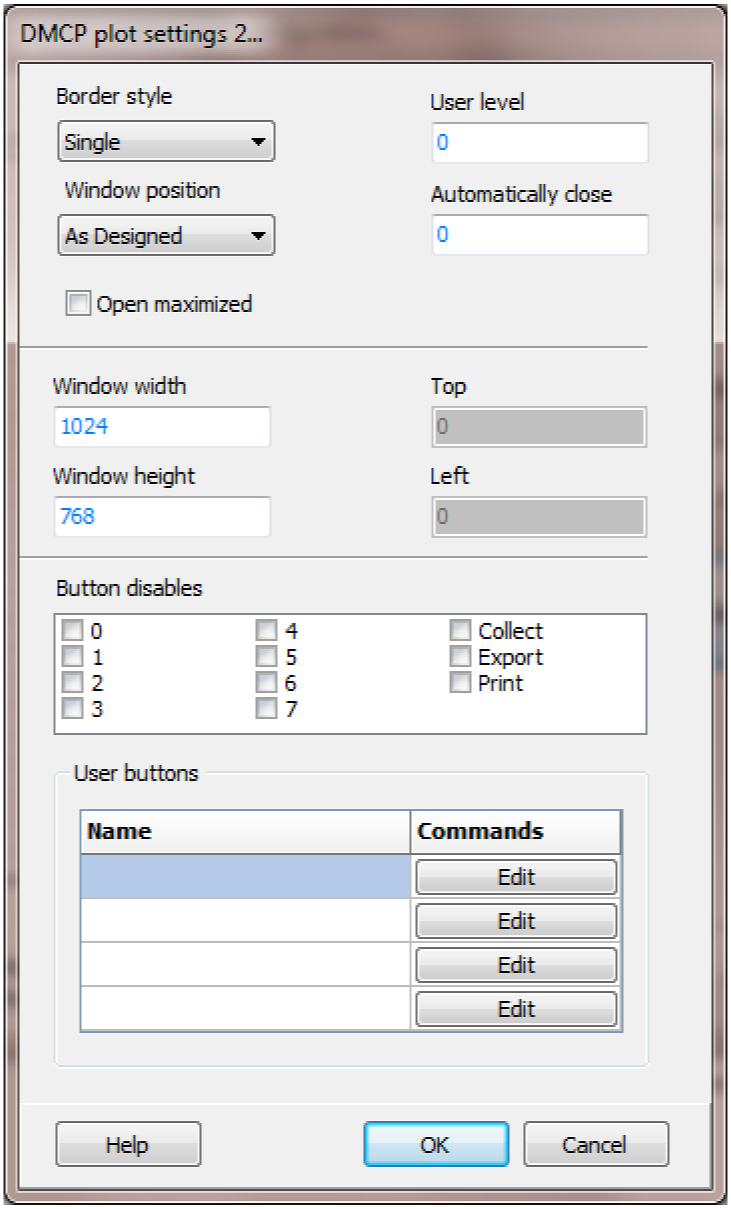
This will display a dialog to save the plot to the selected file. If a file with the same name exists, it will be deleted.

Print

This will print the screen to the selected printer. To print only the trend, use the print button on the trend.

Settings

This button is not present at runtime. It is present in configuration to allow for additional theme configuration settings.



DMCP plot settings 2...

Border style: Single

Window position: As Designed

User level: 0

Automatically close: 0

☐ Open maximized

Window width: 1024

Window height: 768

Top: 0

Left: 0

Button disables

☐ 0
☐ 1
☐ 2
☐ 3
☐ 4
☐ 5
☐ 6
☐ 7
☐ Collect
☐ Export
☐ Print

User buttons

Name	Commands
	Edit
	Edit
	Edit
	Edit

Border style

Windows provides for several window border styles. None, single, sizable and dialog.

Window position

Select the position to open the window. 'As designed' is the same as 'Top Center'.

Open maximized

If enabled, when the window opens, it will maximize to fill the screen.

Window width/height

This size of the window, including any border and title bar.

User Level

At runtime the logged on user must have at least the level entered to view the plot with the theme.

Automatically close

The number of seconds the window will be open. If the value is 0 the window will not automatically close.

Button disables

Each button can be disabled. The plot buttons 0,1..7 will be visible but disabled.
The remaining buttons will not be visible if disabled.

Note: If all the plot buttons are disabled, the only plot to be displayed is the plot number in the script command.

If the "Collect" button is disabled and the "Collect on open" variable is false, the plot shown will only be a plot that was previously collected.

Disabling the "Print" button does not disable the "Print" button on the trend. The "Print" button on the trend is disabled via the "Proprieties" of the trend.

User buttons are disabled/not visible when the button name is blank.

User buttons

Each button can be configured with mouse commands.

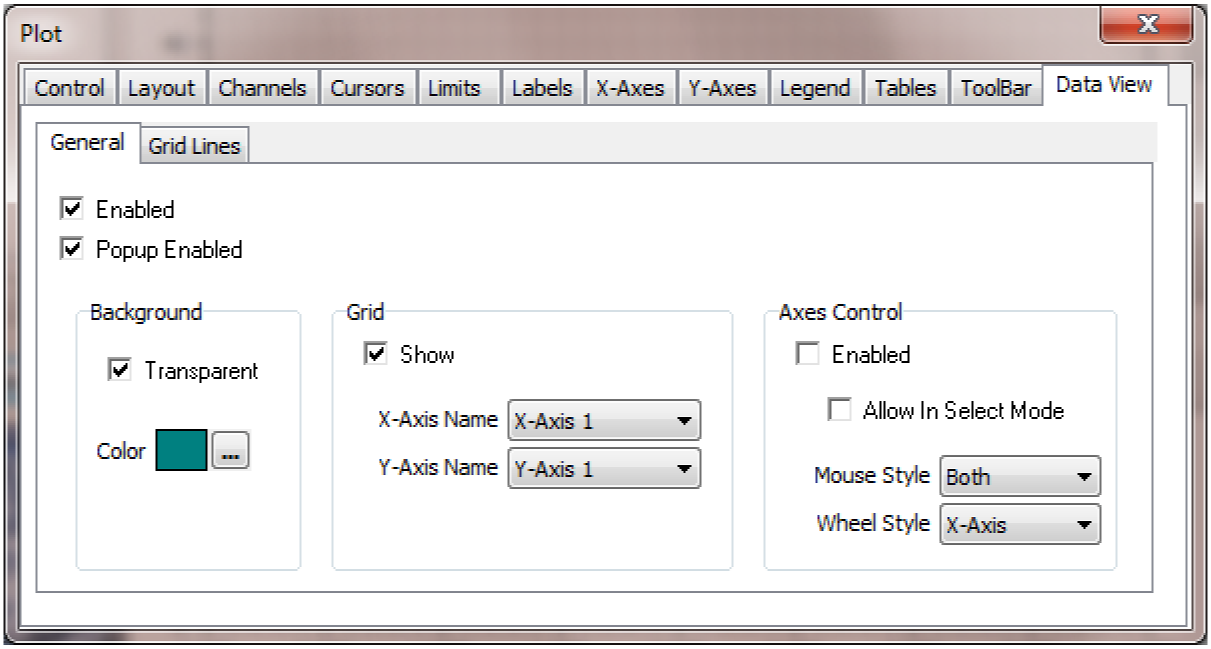
User 1/2/3/4

These buttons may or may not be present based on the settings configuration below.
The buttons are configured in the 'Settings 2' dialog.

Exit

Closes the plot window.

Right click on the trend and the trend settings dialog appears.


Plot
X
Control
Layout
Channels
Cursors
Limits
Labels
X-Axes
Y-Axes
Legend
Tables
ToolBar
Data View
General
Grid Lines
...

☑ Enabled

☑ Popup Enabled

Background

☑ Transparent

Color

Grid

☑ Show

X-Axis Name X-Axis 1

Y-Axis Name Y-Axis 1

Axes Control

☐ Enabled

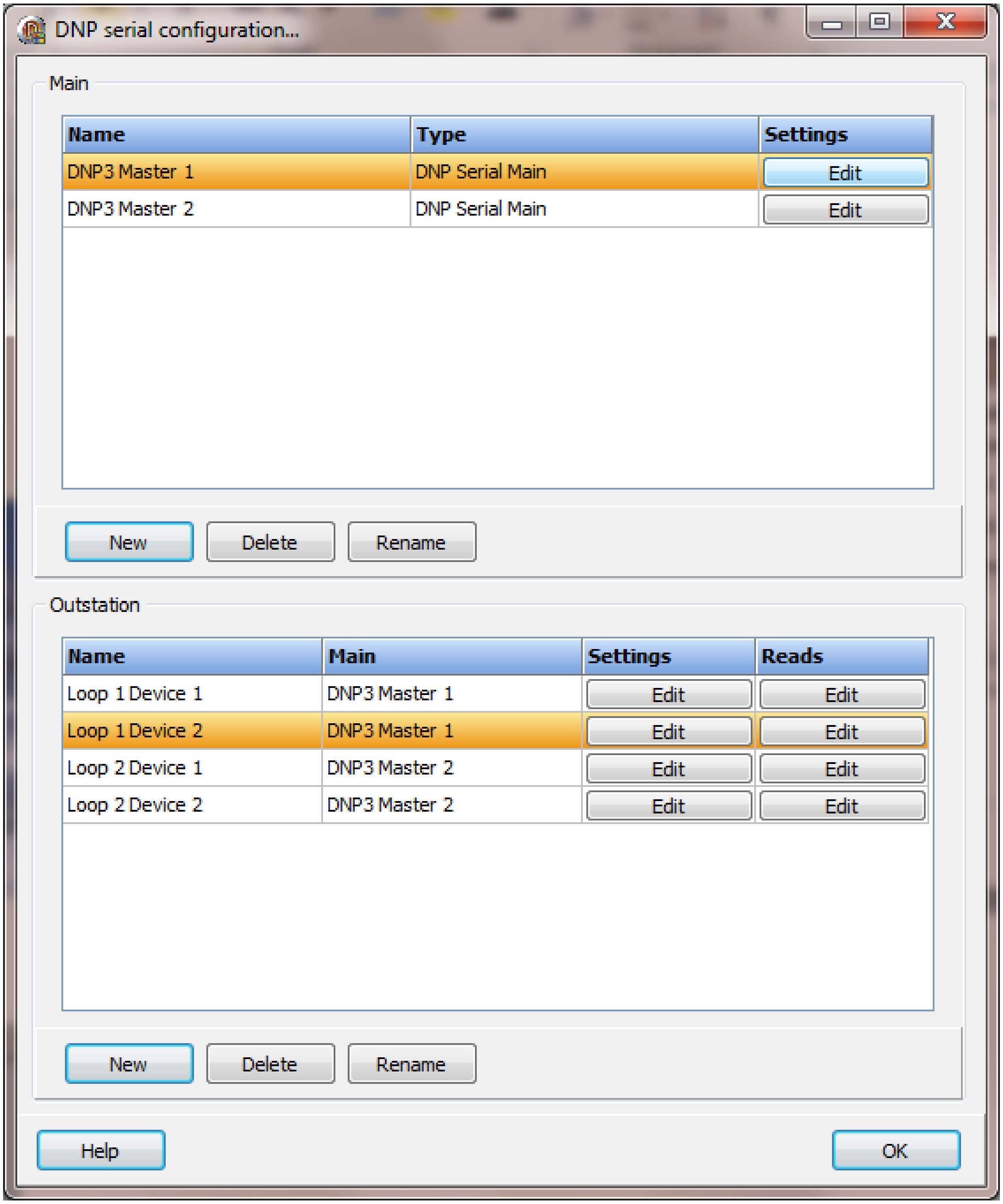
☐ Allow In Select Mode

Mouse Style Both

Wheel Style X-Axis

DNP3 Serial

Each DNP serial master object controls one port and can have one or many outstation objects. The outstations are configured to address one device.


DNP serial configuration...
Main
New
Delete
Rename
Outstation
New
Delete
Rename
Help
OK

Name	Type	Settings
DNP3 Master 1	DNP Serial Main	Edit
DNP3 Master 2	DNP Serial Main	Edit

Name	Main	Settings	Reads
Loop 1 Device 1	DNP3 Master 1	Edit	Edit
Loop 1 Device 2	DNP3 Master 1	Edit	Edit
Loop 2 Device 1	DNP3 Master 2	Edit	Edit
Loop 2 Device 2	DNP3 Master 2	Edit	Edit

Note: If using the port as RS-485 it is sensitive to improper wiring and/or terminations. Unpowered units can cause data echoes and other reliability issues. Please follow all RS-485 wiring guidelines.

DNP serial main

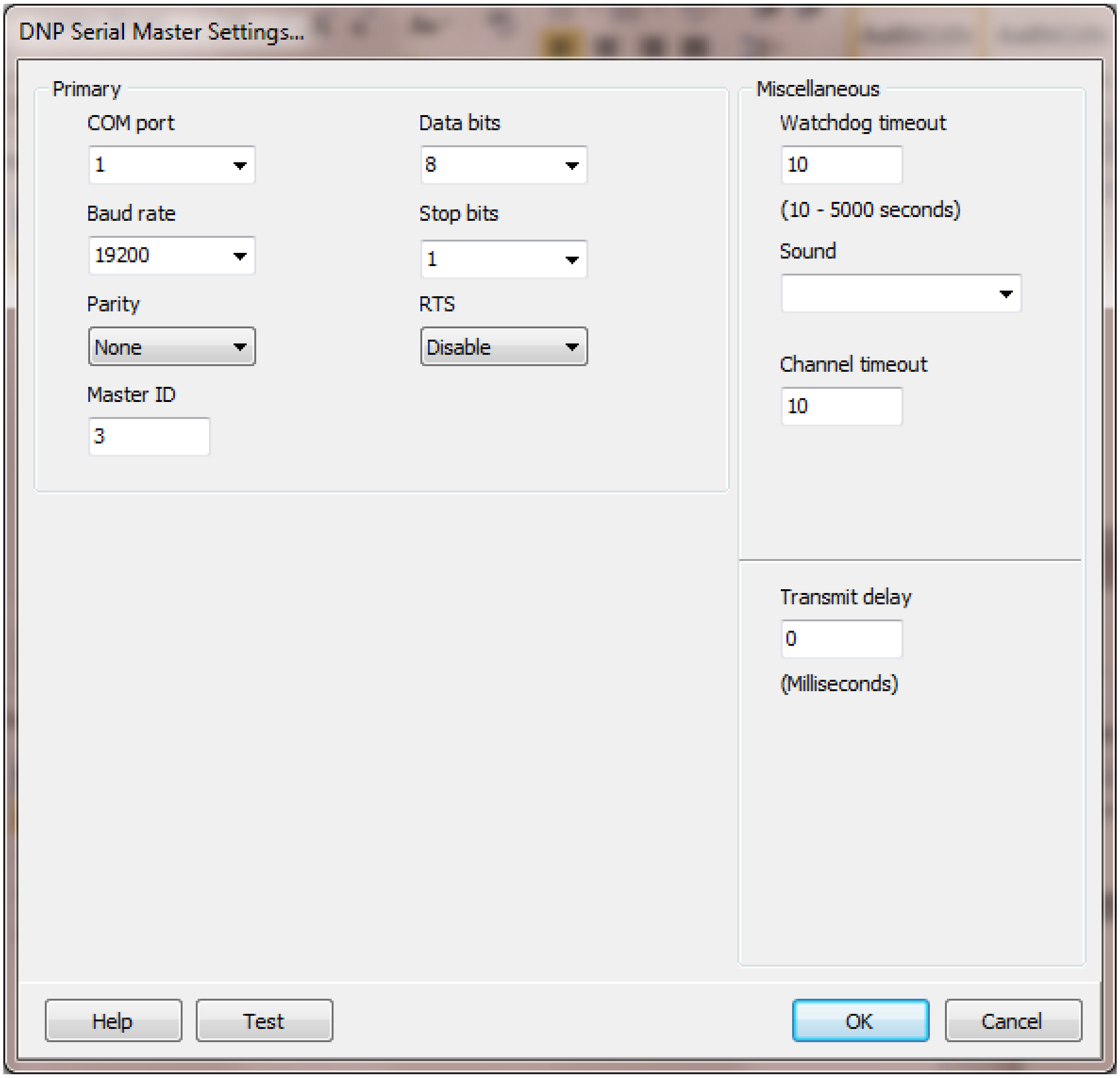
Each DNP serial master object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible DNP serial master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a DNP serial master object select the "Delete" button.

Settings


DNP Serial Master Settings...

Primary

COM port: 1

Data bits: 8

Baud rate: 19200

Stop bits: 1

Parity: None

RTS: Disable

Master ID: 3

Miscellaneous

Watchdog timeout: 10

(10 - 5000 seconds)

Sound:

Channel timeout: 10

Transmit delay: 0

(Milliseconds)

Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Master ID

This is the DNP address of the master.

Miscellaneous

Watchdog timeout (seconds)

This is the amount of time a received fragment must be completed. The timer starts when the first byte is received. If the timer expires, any received segments are discarded and all receiving buffers are cleared.

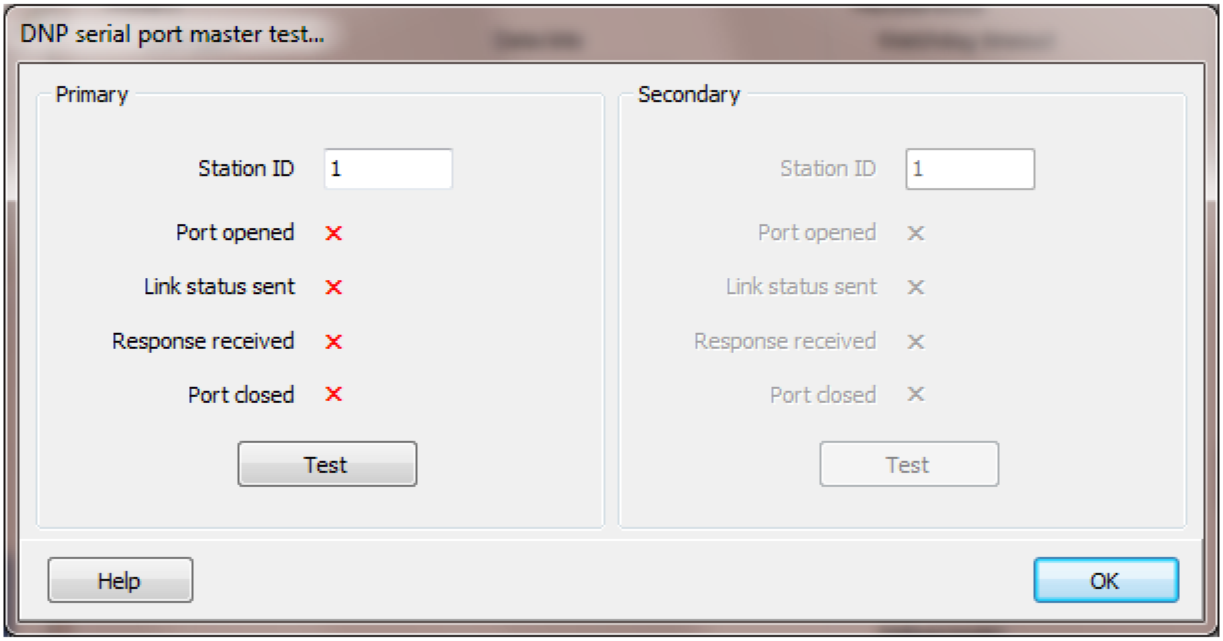
Channel timeout (seconds)

This is the amount of time in which a message must be completed. The timer starts when the message is transmitted. If the timer expires the message request is discarded.

Transmit delay (milliseconds)

Some RS-485 devices need time to switch from transmit mode to receive mode. If this value is > 0 the next data to be transmitted will be delayed by the number of milliseconds. If this communications port is RS-232 then the delay should not be needed.

Test button


DNP serial port master test...

Primary

Station ID: 1

Port opened ✗

Link status sent ✗

Response received ✗

Port closed ✗

Secondary

Station ID: 1

Port opened ✗

Link status sent ✗

Response received ✗

Port closed ✗

When the test button is selected the program will issue a 'REQUEST_LINK_STATUS', function code 9, to the outstation ID entered in the 'Station ID' edit field. The fields below the edit field will display the result of the command.

DNP serial outstation

Each DNP serial outstation object is listed in the window.

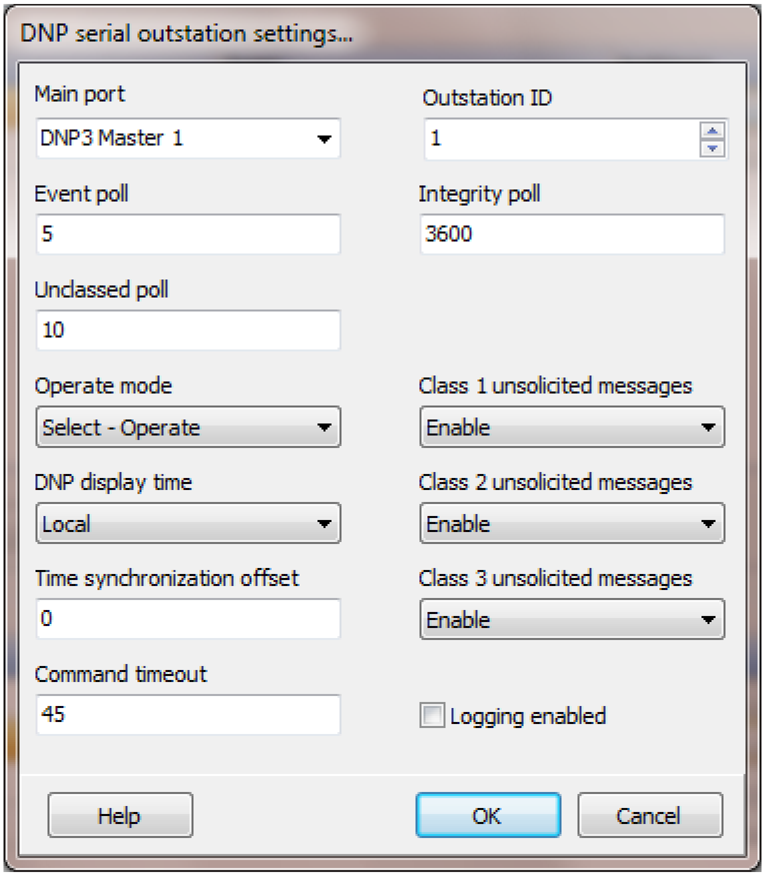
To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible DNP serial outstation objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a DNP serial outstation object select the "Delete" button.

Each DNP serial outstation slave object listed has buttons.

Settings


DNP serial outstation settings...

Main port: DNP3 Master 1

Outstation ID: 1

Event poll: 5

Integrity poll: 3600

Unclassed poll: 10

Operate mode: Select - Operate

Class 1 unsolicited messages: Enable

DNP display time: Local

Class 2 unsolicited messages: Enable

Time synchronization offset: 0

Class 3 unsolicited messages: Enable

Command timeout: 45

☐ Logging enabled

Main port

This is the Master DNP serial port the outstation is linked to. A port must be linked to a master for runtime operations.

Outstation ID

This is the DNP address of the outstation.

Event poll

This is the frequency, in seconds, the outstation will be polled for event data. Enter a value of zero to disable event polling. The outstation must be configured to report events as one of the class types.

Integrity poll

This is the frequency, in seconds, the outstation will be requested to send all data. Enter a value of zero to disable integrity polling. NOTE: This does not included any data the outstation has not configured to be reported.

Unclassed poll

This is the frequency, in seconds, the unclassed reads will be executed. Enter a value of zero to disable unclassed reads. If one or more reads have not been configured this timer is disabled. NOTE: All the enabled reads will be executed starting with the first one in the list and ending with the last one in the list. The timer does not restart until all the enabled reads have completed or timed out.

Operate mode

This selects the mode used to modify writable I/O objects. (10 and 40)

Class 1, 2, 3 unsolicited messages

Enable - Unsolicited messages are enabled for the class.
Disable - Unsolicited messages are disabled for the class.
No change - The outstation selects if unsolicited messages are enabled or disabled for the class.

DNP display time

This determines how time values are handled.

If UTC is selected:
Time values from the outstations are not converted to local time.
Time values for internal alarms are converted from local time to UTC.

If local time is selected:
Time values from the outstations are converted to local time.
Time values for internal alarms are not converted from local time to UTC.

Time synchronization offset

When the time is sent to an outstation this the offset, in milliseconds that is sent to the outstation. This provides for communication lag.

Command timeout

This is the amount of time to allow a command to complete. This value should take into account the number of outstations configured for a master. If this timer completes the masters connection is reset to 'master start' mode. This timer should be greater than the master channel timeout to allow other outstation message processing.

Logging enabled

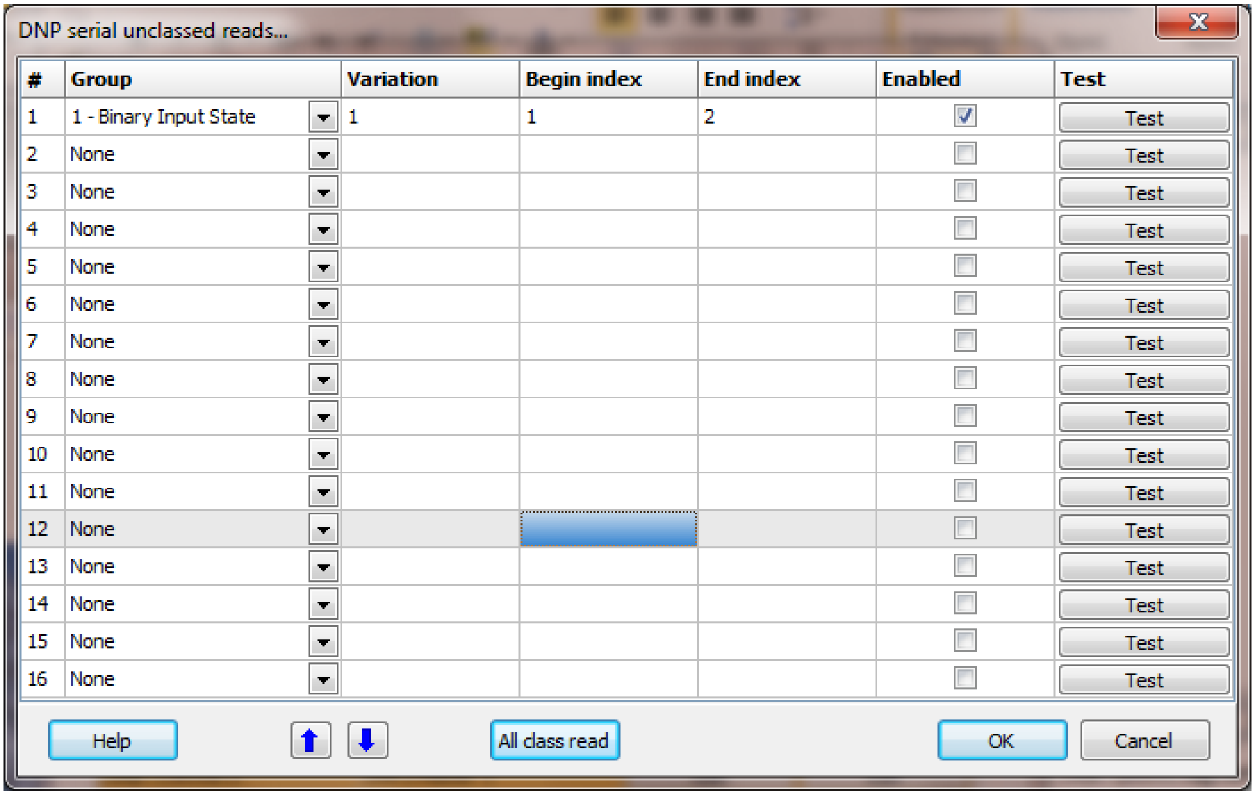
When this feature is enabled and a DNP event object is received it will be logged to a file. Each outstation has a separate log file. See Log File Settings

Only events that are configured as points will be logged.

All time values are in UTC. This is the value reported from the outstation without conversion to human readable time or local time.

Each line has five columns and each column is separated with a 'TAB' character.
Line format:<UTC time> TAB <group number . index number> TAB <point tagname> TAB <value> TAB <point description> CRLF(carriage return + line feed)

Reads



#	Group	Variation	Begin index	End index	Enabled	Test
1	1 - Binary Input State	1	1	2	☑	Test
2	None				☐	Test
3	None				☐	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

NOTE: Normal operation of DNP is report-by-exception. Some devices may contain data that is not included in report-by-exception, event polling or integrity polling. This is not normally the case and special care must be taken to properly configure any reads to prevent a failure of DNP communications.

The groups and ranges shown may or may not be present in the outstation device.

Group

The DNP object group.
1 - Binary Input State
3 - Double Bit Input State
10 - Binary Output State
20 - Counter Value
21 - Frozen Counter Value
30 - Analog Input Value
40 - Analog Output Value
50 - Time and Date
110 - Octet String Value

Variation

Variation 0 is the default variation.

Begin/End index

The beginning and ending index number and the end index number.
NOTE: Use caution. This can disrupt all DNP communications.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

All class read

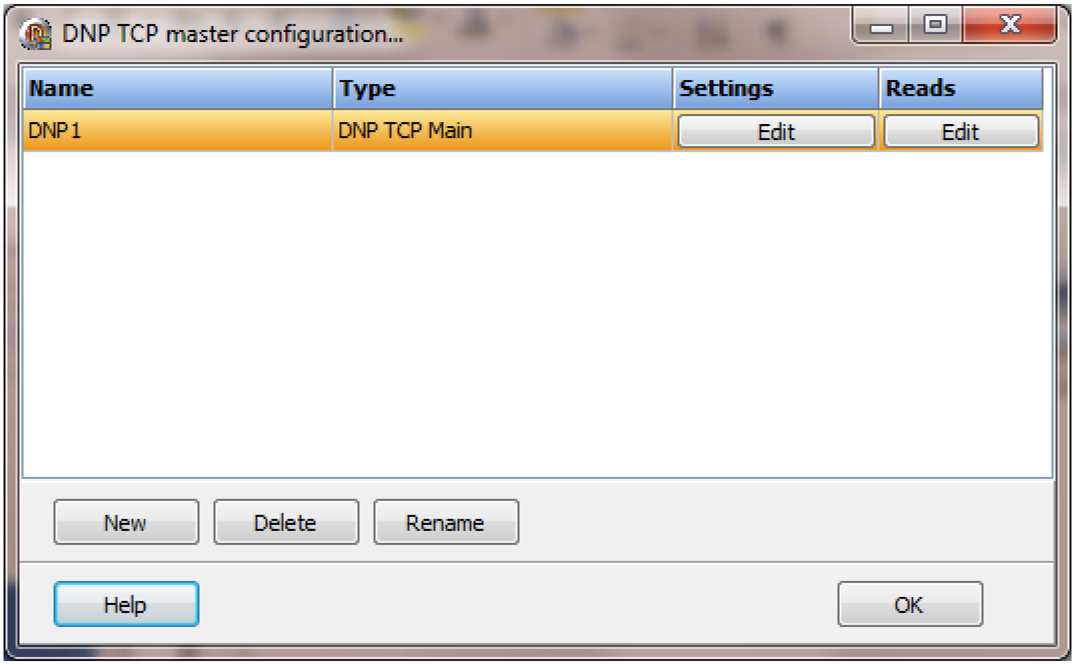
When this button is selected a Class 0 (Group 60, variation 1) read will be issued to the outstation. The outstation will return the static data of all its points that have been assigned to one of the four classes (static class 0, events classes 1, 2, or 3). Any points that are not assigned to one of the four classes will be excluded from the response, with the result that the response to the Class 0 request may contain a subset of all the outstation's static data. The outstation will include some or all of the following objects in its response: groups 1, 3, 10, 20, 21, 30, 31, 40, 87, 101, 102, and 110. Please see the DNP specification for more information.

Error messages

Invalid begin index	The begin index must be 0 - 65535.
Invalid end index	The end index must be 0 - 65535 and greater than or equal to the 'begin index'.
Variation not allowed	Not all objects support all variations.

DNP3 TCP

Each DNP3 TCP master object is listed in the window.



DNP TCP master configuration...

Name	Type	Settings	Reads
DNP1	DNP TCP Main	Edit	Edit

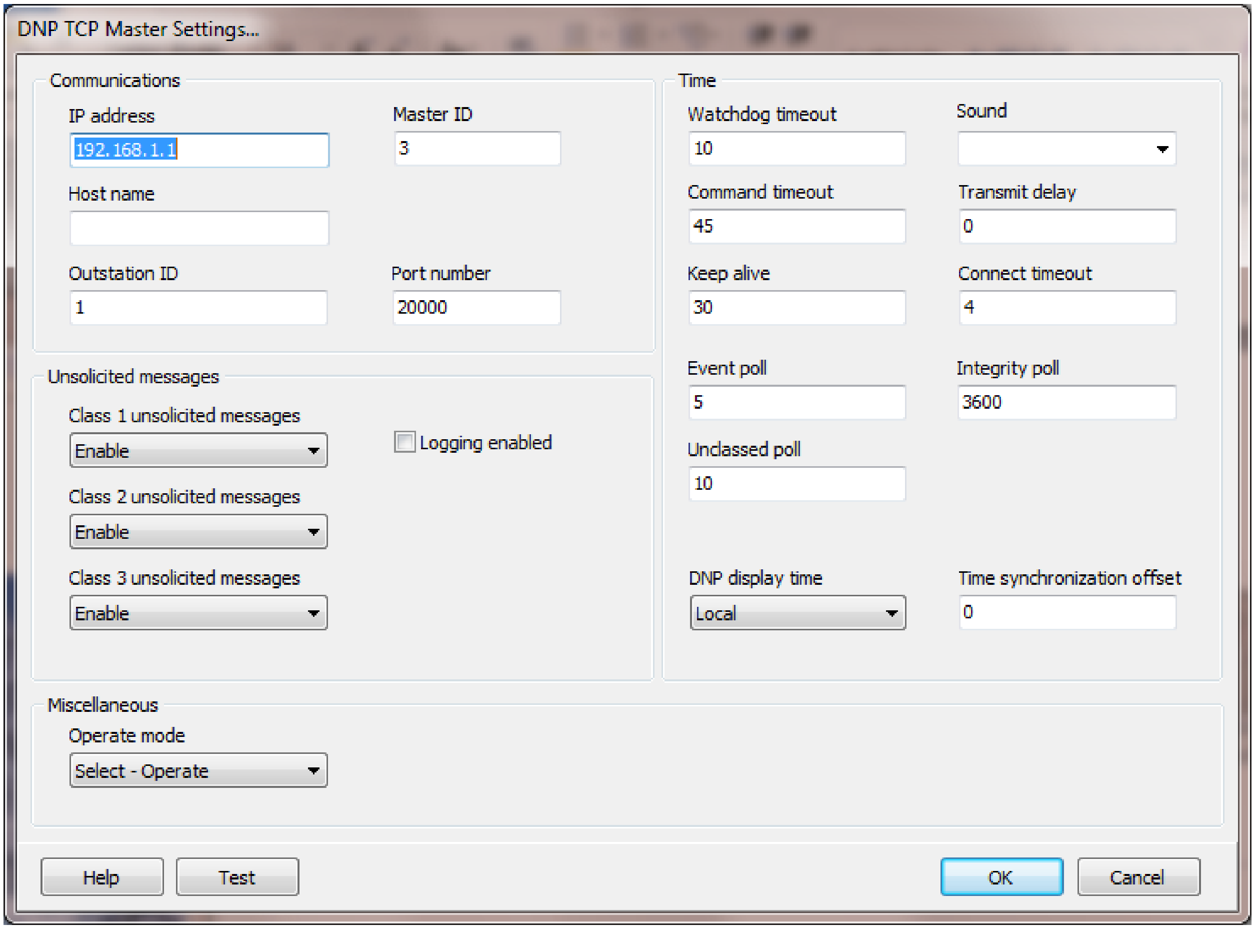
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible DNP TCP master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a DNP TCP master object select the "Delete" button.

Settings


DNP TCP Master Settings...

Communications
IP address: 192.168.1.1
Master ID: 3
Host name:
Outstation ID: 1
Port number: 20000

Unsolicited messages
Class 1 unsolicited messages: Enable
Class 2 unsolicited messages: Enable
Class 3 unsolicited messages: Enable
☐ Logging enabled

Time
Watchdog timeout: 10
Sound:
Command timeout: 45
Transmit delay: 0
Keep alive: 30
Connect timeout: 4
Event poll: 5
Integrity poll: 3600
Unclassed poll: 10
DNP display time: Local
Time synchronization offset: 0

Miscellaneous
Operate mode: Select - Operate

Each master configuration communicates with one outstation.

Communications

IP address

This is the address of the outstation.

Host name

This is the host name of the outstation. If the host name is blank the IP address is used.

Port number

This is the port number to use for communications with the outstation for TCP connections initiated by the master.

Master ID

This is the DNP address of the master.

Outstation ID

This is the DNP address of the outstation.

Time

Watchdog timeout (seconds)

This is the amount of time a received fragment must be completed. The timer starts when the first byte is received. If the timer expires, any received segments are discarded and all receiving buffers are cleared.

Command timeout (seconds)

This is the amount of time to allow a command to complete. If this timer completes the last message is discarded and if another is pending it is processed.

Transmit delay (milliseconds)

If this value is > 0 the next data to be transmitted will be delayed by the number of milliseconds.

Keep alive (seconds)

If this timer completes a 'request link status' message is transmitted to the outstation. This timer is restarted each time data is received from the outstation. If for example the event timer is set to 5 seconds and this timer is set to 10 seconds and the outstation connection is valid this timer will never fire. If for example, the event timer is set to 10 minutes this timer can be used to verify the link is still active. Enter a value of zero to disable this timer.

Connect timeout (seconds)

This is the amount time the outstation must respond to a connection request before the attempt is aborted and restarted.

Event poll

This is the frequency, in seconds, the outstation will be polled for event data. Enter a value of zero to disable event polling. The outstation must be configured to report events as one of the class types.

Integrity poll

This is the frequency, in seconds, the outstation will be requested to send all data. Enter a value of zero to disable integrity polling. NOTE: This does not included any data the outstation has not configured to be reported.

Unclassed poll

This is the frequency, in seconds, the unclassed reads will be executed. Enter a value of zero to disable unclassed reads. If one or more reads have not been configured this timer is disabled. NOTE: All the enabled reads will be executed starting with the first one in the list and ending with the last one in the list. The timer does not restart until all the enabled reads have completed or timed out.

DNP display time

This determines how time values are handled.

If UTC is selected:
Time values from the outstations are not converted to local time.
Time values for internal alarms are converted from local time to UTC.

If local time is selected:
Time values from the outstations are converted to local time.
Time values for internal alarms are not converted from local time to UTC.

Time synchronization offset

When the time is sent to an outstation this the offset, in milliseconds, that is sent to the outstation. This provides for communication lag.

Unsolicited messages

Class 1, 2, 3 unsolicited messages

Enable - Unsolicited messages are enabled for the class.
Disable - Unsolicited messages are disabled for the class.
No change - The outstation selects if unsolicited messages are enabled or disabled for the class.

Logging enabled

When this feature is enabled and a DNP event object is received it will be logged to a file. Each outstation has a separate log file. See Log File Settings

Only events that are configured as points will be logged.

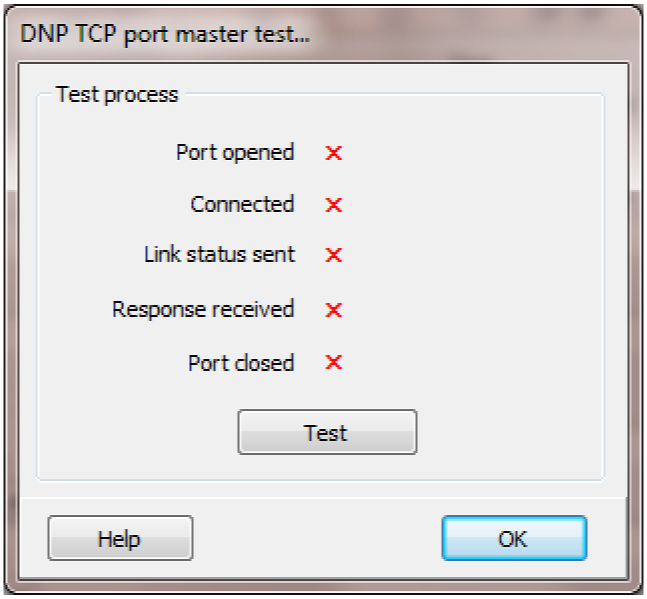
All time values are in UTC. This is the value reported from the outstation without conversion to human readable time or local time.
Each line has five columns and each column is separated with a 'TAB' character.
Line format:<UTC time> TAB <group number . index number> TAB <point tagname> TAB <value> TAB <point description> CRLF(carriage return + line feed)

Miscellaneous

Operate mode

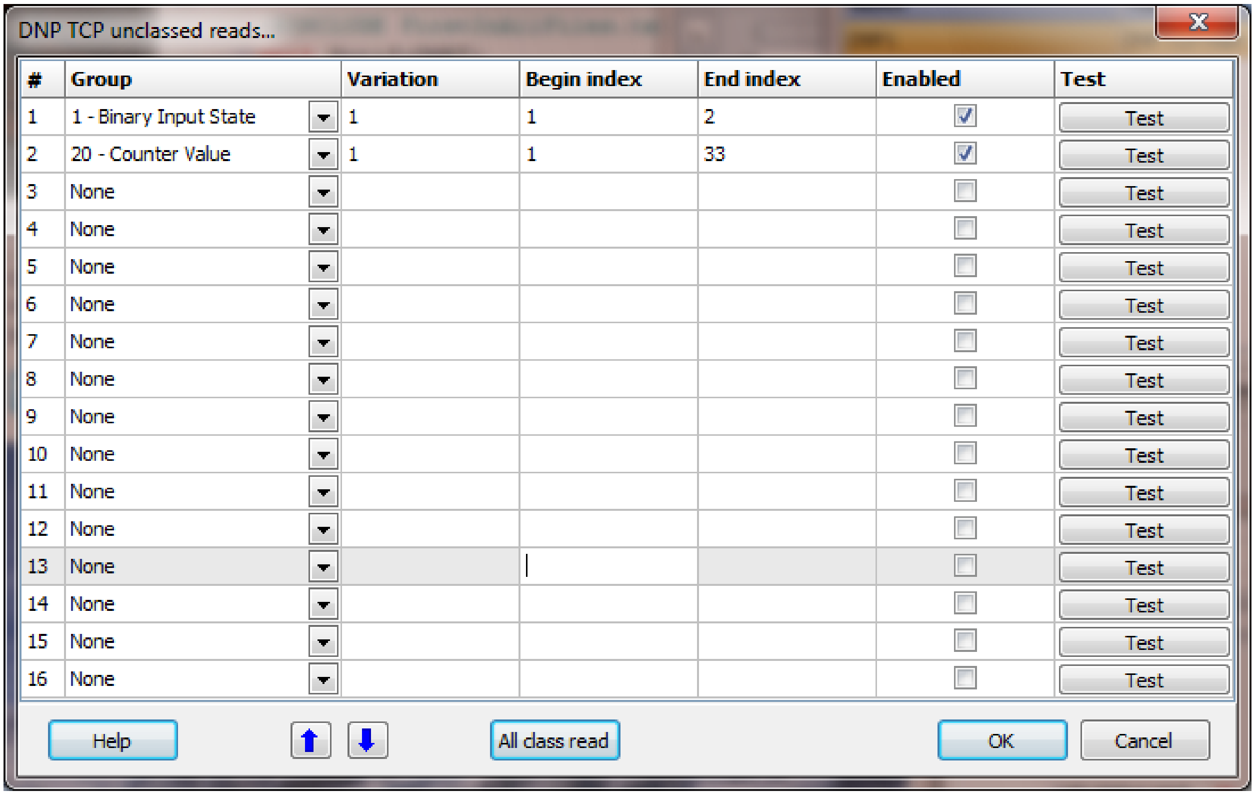
This selects the mode used to modify writable I/O objects. (10 and 40)

Test button


DNP TCP port master test...
Test process
Port opened ✗
Connected ✗
Link status sent ✗
Response received ✗
Port closed ✗
Test
Help
OK

When the test button is selected the program will issue a 'REQUEST_LINK_STATUS', function code 9, to the outstation ID.

Reads



#	Group	Variation	Begin index	End index	Enabled	Test
1	1 - Binary Input State	1	1	2	☑	Test
2	20 - Counter Value	1	1	33	☑	Test
3	None				☐	Test
4	None				☐	Test
5	None				☐	Test
6	None				☐	Test
7	None				☐	Test
8	None				☐	Test
9	None				☐	Test
10	None				☐	Test
11	None				☐	Test
12	None				☐	Test
13	None				☐	Test
14	None				☐	Test
15	None				☐	Test
16	None				☐	Test

NOTE: Normal operation of DNP is report-by-exception. Some devices may contain data that is not included in report-by-exception, event polling or integrity polling. This is not normally the case and special care must be taken to properly configure any reads to prevent a failure of DNP communications.

The groups and ranges shown may or may not be present in the outstation device.

Group

The DNP object group.
1 - Binary Input State
3 - Double Bit Input State
10 - Binary Output State
20 - Counter Value
21 - Frozen Counter Value
30 - Analog Input Value
40 - Analog Output Value
50 - Time and Date
110 - Octet String Value

Variation

Variation 0 is the default variation.

Begin/End index

The beginning and ending index number and the end index number. NOTE: Use caution. This can disrupt all DNP communications.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

All class read

When this button is selected a Class 0 (Group 60, variation 1) read will be issued to the outstation. The outstation will return the static data of all its points that have been assigned to one of the four classes (static class 0, events classes 1, 2, or 3). Any points that are not assigned to one of the four classes will be excluded from the response, with the result that the response to the Class 0 request may contain a subset of all the outstation's static data. The outstation will include some or all of the following objects in its response: groups 1, 3, 10, 20, 21, 30, 31, 40, 87, 101, 102, and 110. Please see the DNP specification for more information.

Error messages

Invalid begin index	The begin index must be 0 - 65535.
Invalid end index	The end index must be 0 - 65535 and greater than or equal to the 'begin index'.
Variation not allowed	Not all objects support all variations.

DNP Objects

The HMI supports the listed objects:

Groups	**Point type**	**Default Variation**
1 - Binary Input State	Digital	1
3 - Double Bit Input State	Analog	1
10 - Binary Output State	Digital	1
20 - Counter Value	Analog	5
21 - Frozen Counter Value	Analog	9
30 - Analog Input Value	Analog	6
31 - Frozen Analog Input	Analog	8
34 - Analog Input Deadband	Analog	3
40 - Analog Output Value	Analog	4
50 - Time and Date	Analog	*1,2 1
110 - Octet String Value	N/A	*2 N/A

All event objects associated with the above groups are also supported.
The point addressing format is **<group number> . <variation number> . <index number>**

Group Number

The group number is one of the above groups.

Variation Number

The outstation transmits the variation it is configured to transmit. The variation number is used to define the data type/size to be used for writes to the outstation. A variation of 0 (zero) is used for the default variation. Group 110 uses the variation as the length of the string. Allowed range is 1 - 255.

Index number

The allowed range is 0 - 65535. The outstation will define the actual permitted range.

Notes:
*1 This is the time in the outstation.
*2 The first release does not fully support this object type.

Point status defines for B0 - B15

Group 1, 10, 20, 30, 31 and 40

B0 Bit 0: ONLINE
B1 Bit 1: RESTART
B2 Bit 2: COMM_LOST
B3 Bit 3: REMOTE_FORCED
B4 Bit 4: LOCAL_FORCED

Group 1

B5 Bit 5: CHATTER_FILTER
Group 20

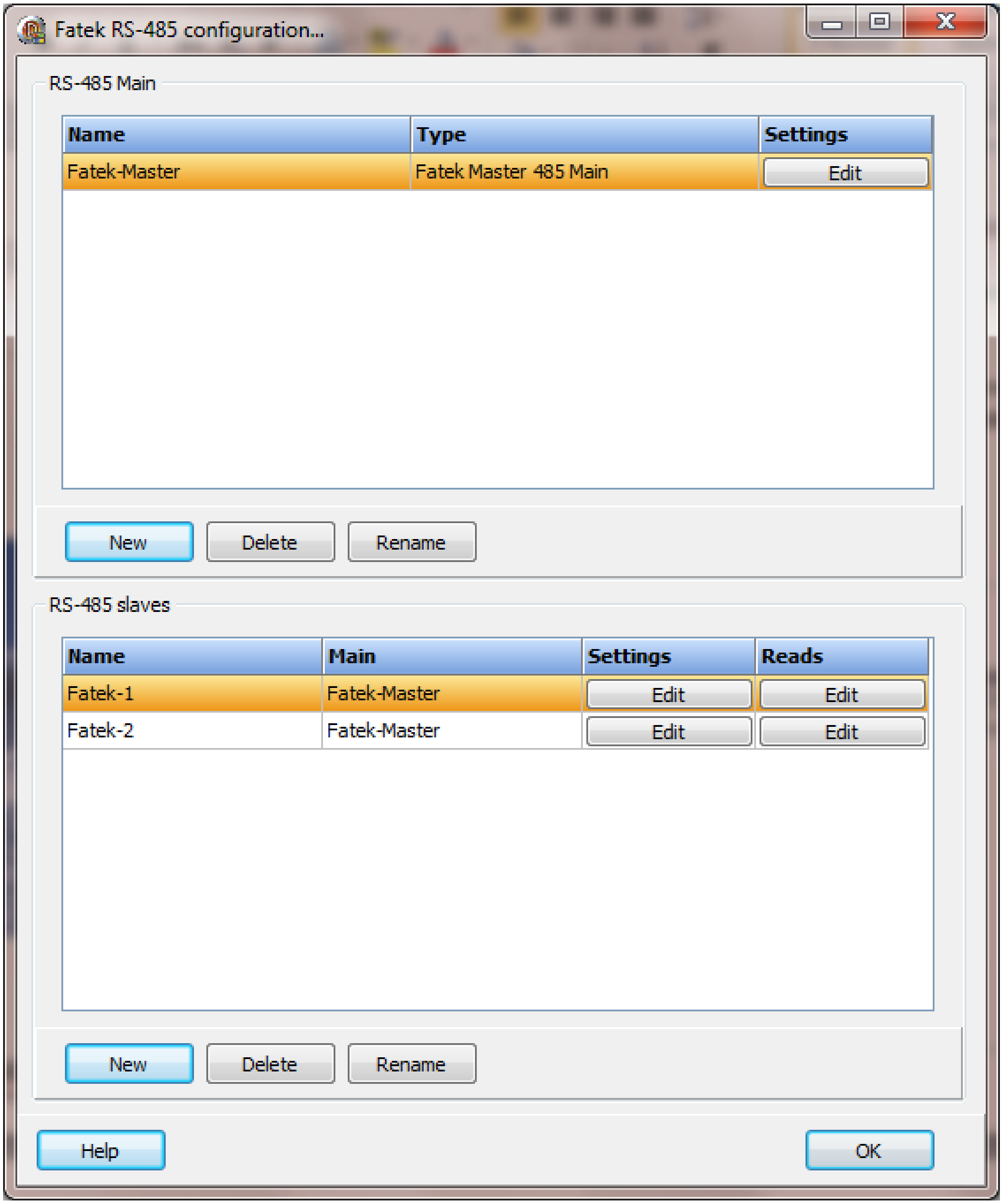
B5 Bit 5: ROLLOVER
B6 Bit 6: DISCONTINUITY

Group 30, 31 and 40

B5 Bit 5: OVER_RANGE
B6 Bit 6: REFERENCE_ERR

FATEK SERIAL

Each Fatek RS-485 master object controls one serial port and can have one or many slave objects. The slaves are configured to address one device.


Fatek RS-485 configuration...
RS-485 Main
New
Delete
Rename
RS-485 slaves
New
Delete
Rename
Help
OK

RS-485 Main

Name	Type	Settings
Fatek-Master	Fatek Master 485 Main	Edit

RS-485 slaves

Name	Main	Settings	Reads
Fatek-1	Fatek-Master	Edit	Edit
Fatek-2	Fatek-Master	Edit	Edit

Note: RS-485 is sensitive to improper wiring and/or terminations. Unpowered units can cause data echoes and other reliability issues. Please follow all RS-485 wiring guidelines.

Fatek RS-485 serial main

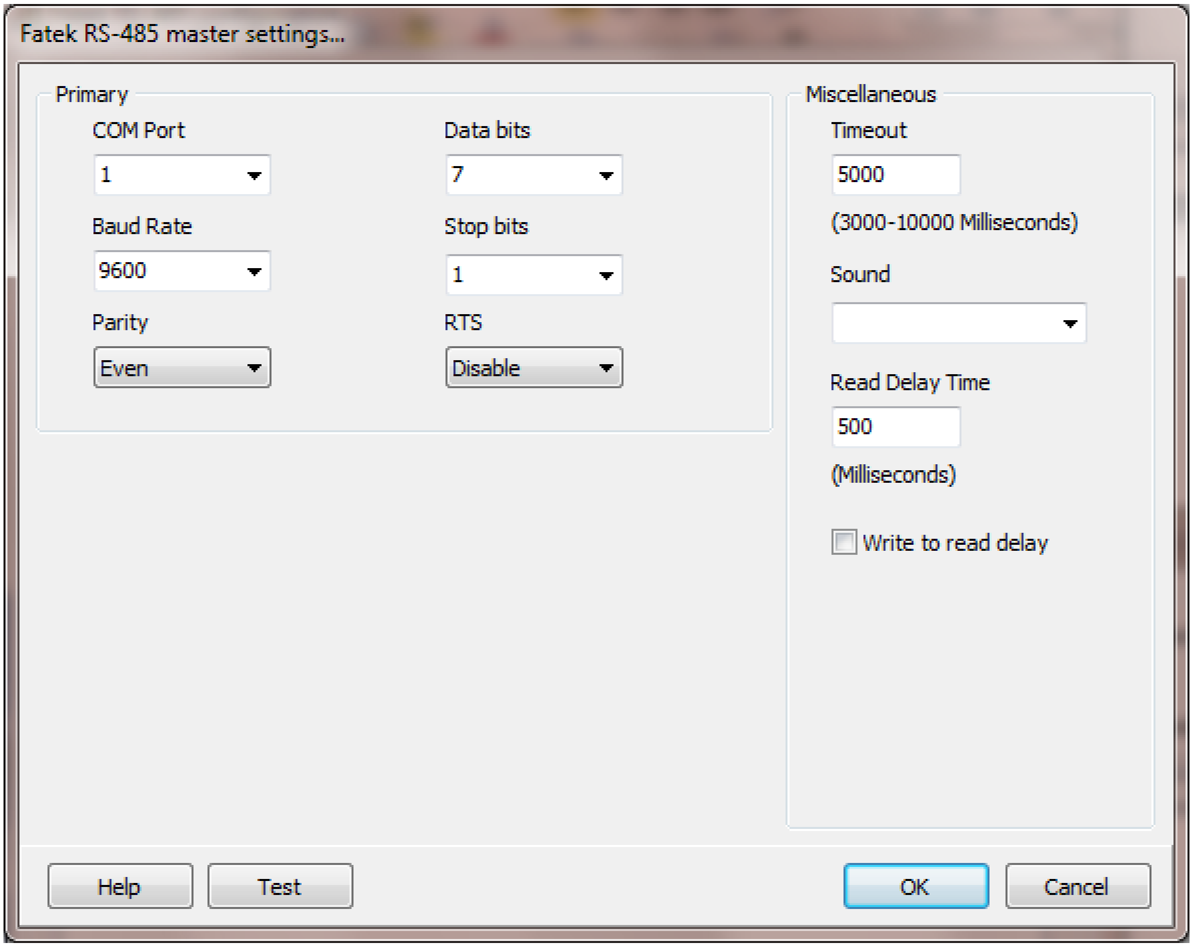
Each Fatek RS-485 master object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Fatek master object select the "Delete" button.

Settings



Fatek RS-485 master settings...

Primary

COM Port: 1

Data bits: 7

Baud Rate: 9600

Stop bits: 1

Parity: Even

RTS: Disable

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 500

(Milliseconds)

☐ Write to read delay

Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data was received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

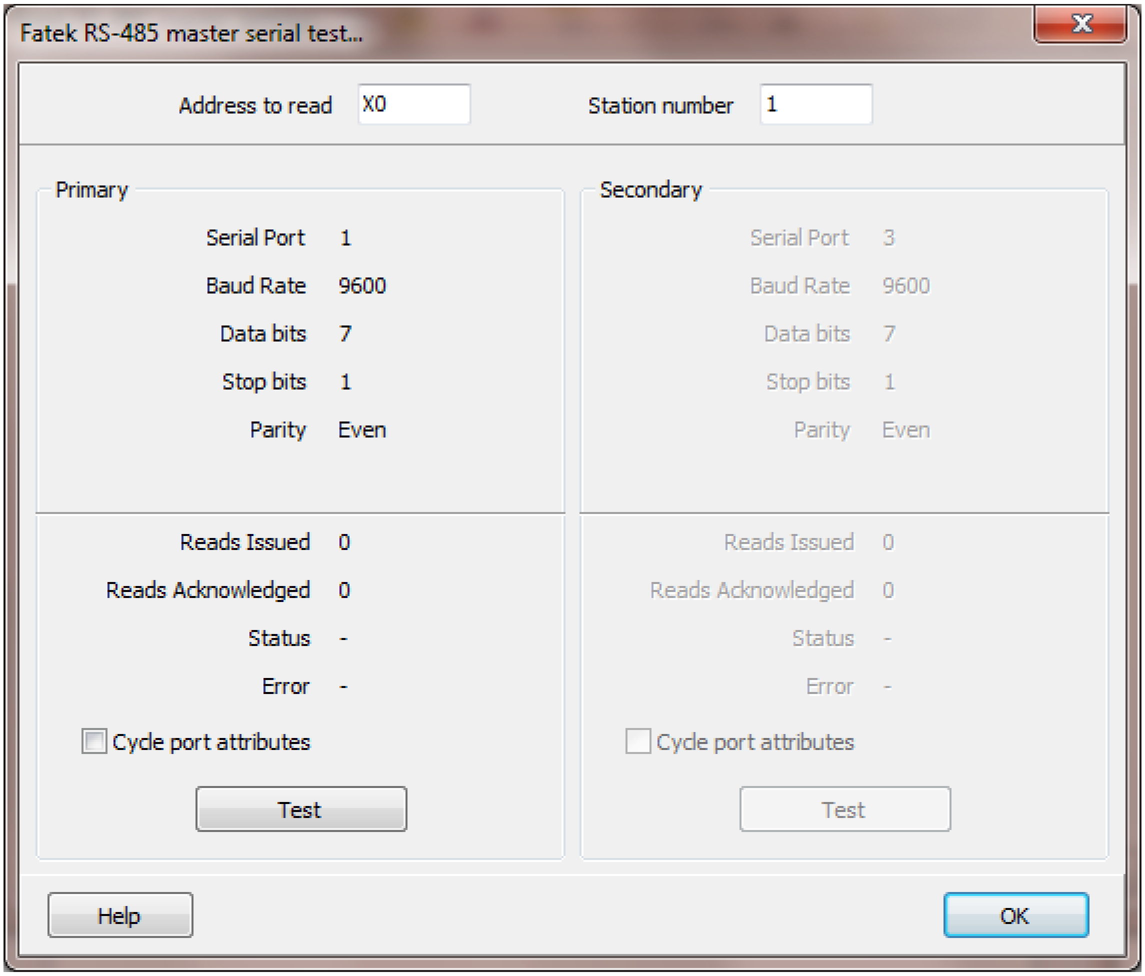
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Test button



Fatek RS-485 master serial test...

Address to read: X0

Station number: 1

Primary

Serial Port: 1

Baud Rate: 9600

Data bits: 7

Stop bits: 1

Parity: Even

Reads Issued: 0

Reads Acknowledged: 0

Status: -

Error: -

☐ Cycle port attributes

Secondary

Serial Port: 3

Baud Rate: 9600

Data bits: 7

Stop bits: 1

Parity: Even

Reads Issued: 0

Reads Acknowledged: 0

Status: -

Error: -

☐ Cycle port attributes

When the test button is selected the program will attempt to read one point of data from the device at the address entered.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Fatek RS-485 Slaves

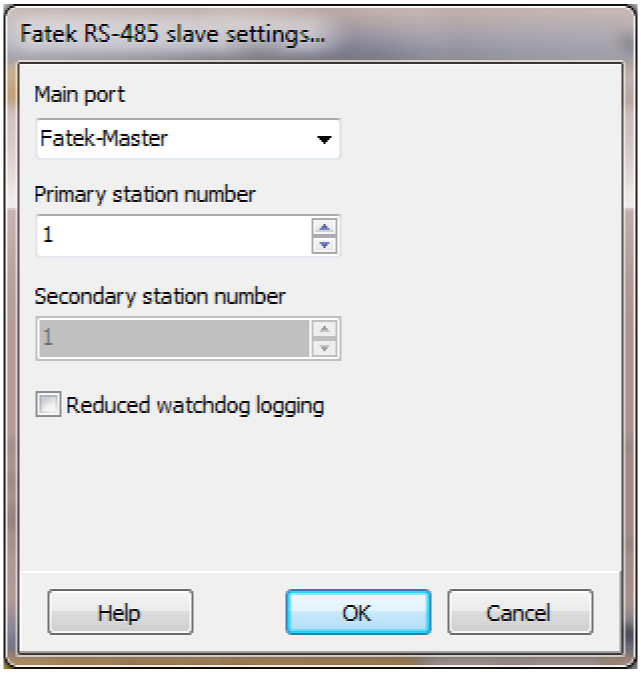
Each Fatek RS-485 slave object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek slave objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Fatek slave object select the "Delete" button.

Settings



Fatek RS-485 slave settings...

Main port: Fatek-Master

Primary station number: 1

Secondary station number: 1

☐ Reduced watchdog logging

Main port

This is the master RS-485 port the slave is linked to. A port must be linked to a master for runtime operations.

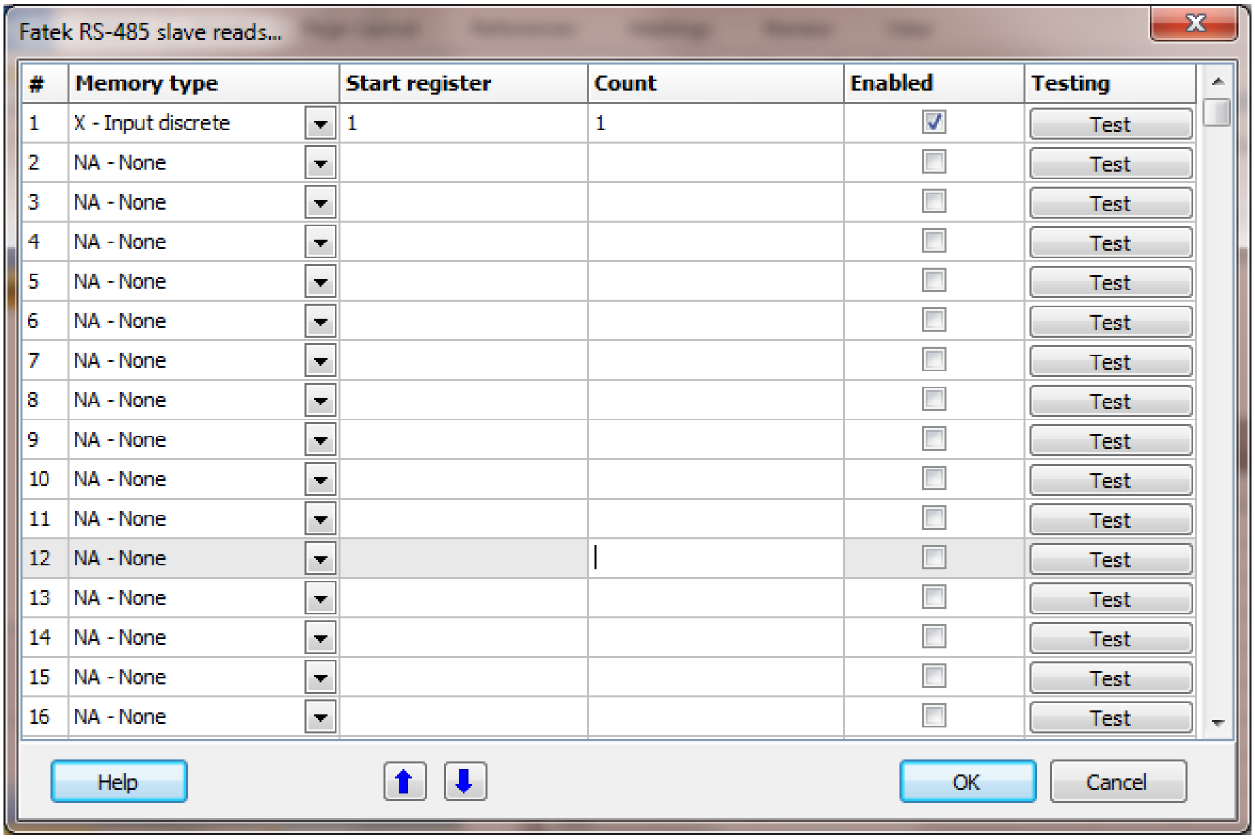
Primary station number
Secondary station number (Future)

This is the station number of the slave device for the primary and secondary. (1 - 255)

Reduced watchdog logging

When enabled and a watchdog timeout occurs, a single entry will be placed in the event log and the sound will be queued (if configured). When the slave device responds, after a watchdog timeout, a single entry will be placed in the event log. The watchdog counter will continue to count each time the watchdog timer expires.

Reads



#	Memory type	Start register	Count	Enabled	Testing
1	X - Input discrete	1	1	☑	Test
2	NA - None			☐	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

Registers

Address Examples
X0, X28
Y0, Y4
TMR0, CTR105

Memory type

Register Type	Prefix	Data Type
Input discrete	X	Boolean
Output relay	Y	Boolean
Internal relay	M	Boolean
Step relay	S	Boolean
Timer discrete	T	Boolean
Counter discrete	C	Boolean
Timer register	TMR	Word
Counter register	CTR	Word
Register	R	Word
Data Register	D	Word

Notes:
1) The analog point 'source type' will determine if 1 or 2 words are used.
2) In WinProLadder, using a FBs-10MA PLC, the status window, R uses 1 word and DR uses 2 words, both using the same memory area.
Caution: The addressing has overlap.
R0 is word 0.
R1 is word 1.
DR0 is word 0 and 1.
DR1 is word 1 and 2.

Start register

This is the start register value for the read. Each line is one read from the HMI to the PLC requesting data from the PLC.

Count

This is the number of points to return. For Boolean types the per read point limit is 256. For Word types the per read point limit is 64.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

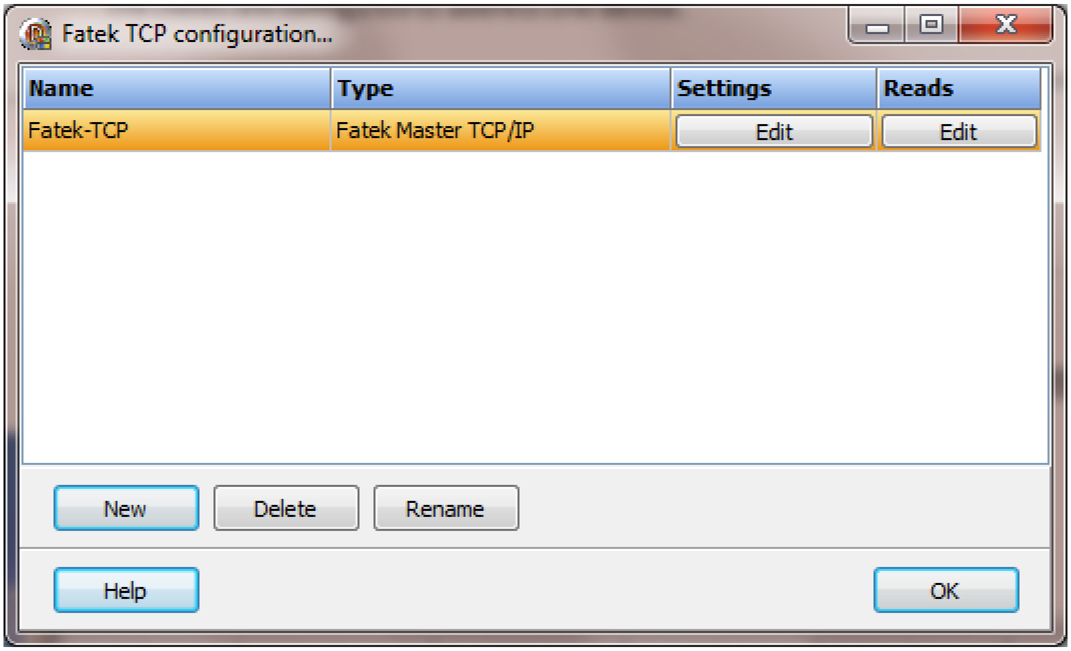
When the button is selected the program will attempt to access the data in the device using the communication parameters configured.

Error messages

No memory type selected	The memory type has not been selected.
Start out of range	The value is out of range for the type.
Count exceeds limit	The count must be 64 or less for words types; 256 or less for Boolean types.
Start + count exceeds register limit	The register plus the count exceeds the maximum address range.
Count < 1	The line must read at least on register.

FATEK TCP

Each Fatek TCP/IP object is listed in the window.


Fatek TCP configuration...

Name	Type	Settings	Reads
Fatek-TCP	Fatek Master TCP/IP	Edit	Edit

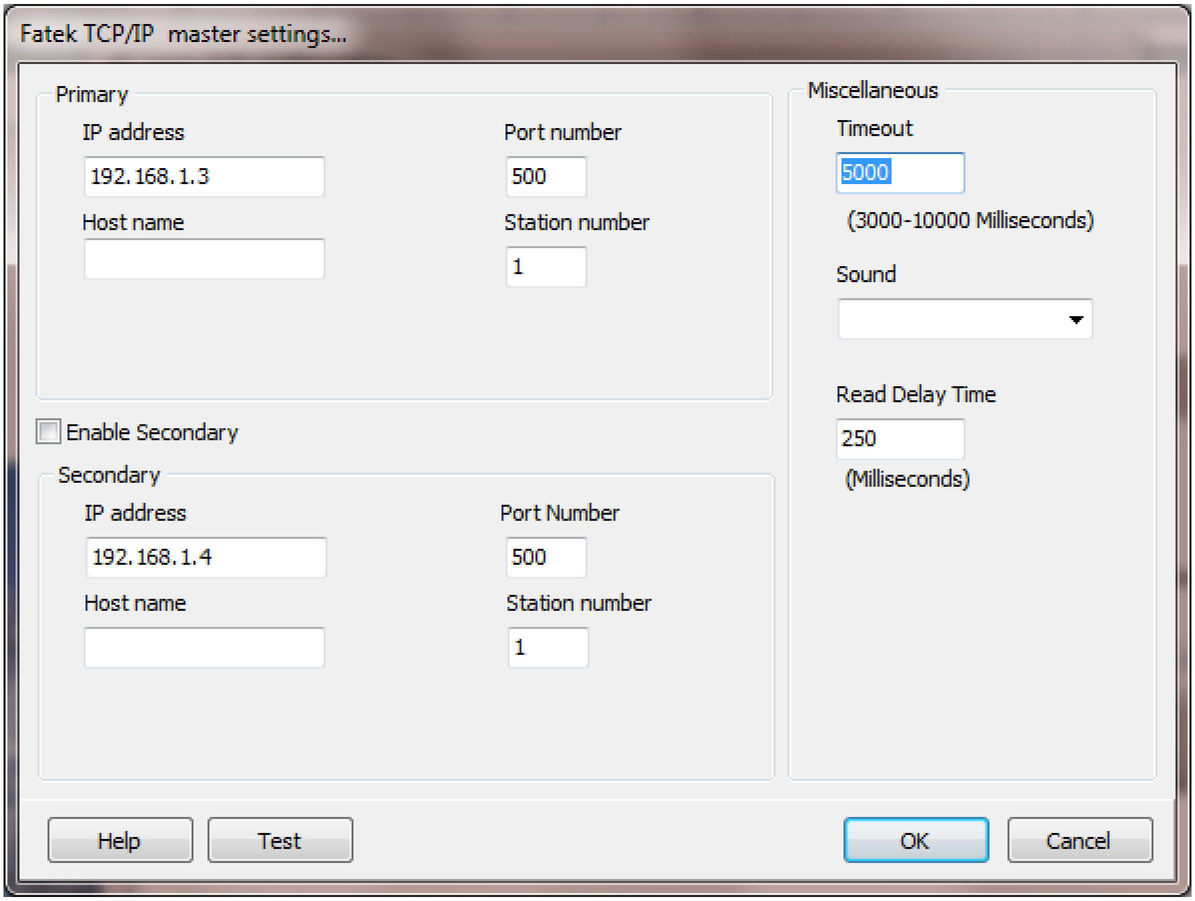
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Fatek object select the "Delete" button.

Settings


Fatek TCP/IP master settings...

Primary

IP address: 192.168.1.3

Host name:

Port number: 500

Station number: 1

☐ Enable Secondary

Secondary

IP address: 192.168.1.4

Host name:

Port Number: 500

Station number: 1

Miscellaneous

Timeout: 5000 (3000-10000 Milliseconds)

Sound:

Read Delay Time: 250 (Milliseconds)

The port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Port number

This is the port number used for TCP communication. The default port number is 500.

Station number

This is the station number of the slave device. (1 - 255)

Enable Secondary

The "Enable Secondary" checkbox provides for a second path to be used as a hot backup. When in run mode the primary configuration is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary configuration. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary configuration, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary configuration an entry will be made in the event log and operations will return to the primary port.

If the computer has two network interface cards (NIC) the program will use the first one detected for the primary and the second one detected for the secondary. If only one NIC is detected the program will use it for the primary and the secondary.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sounds delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

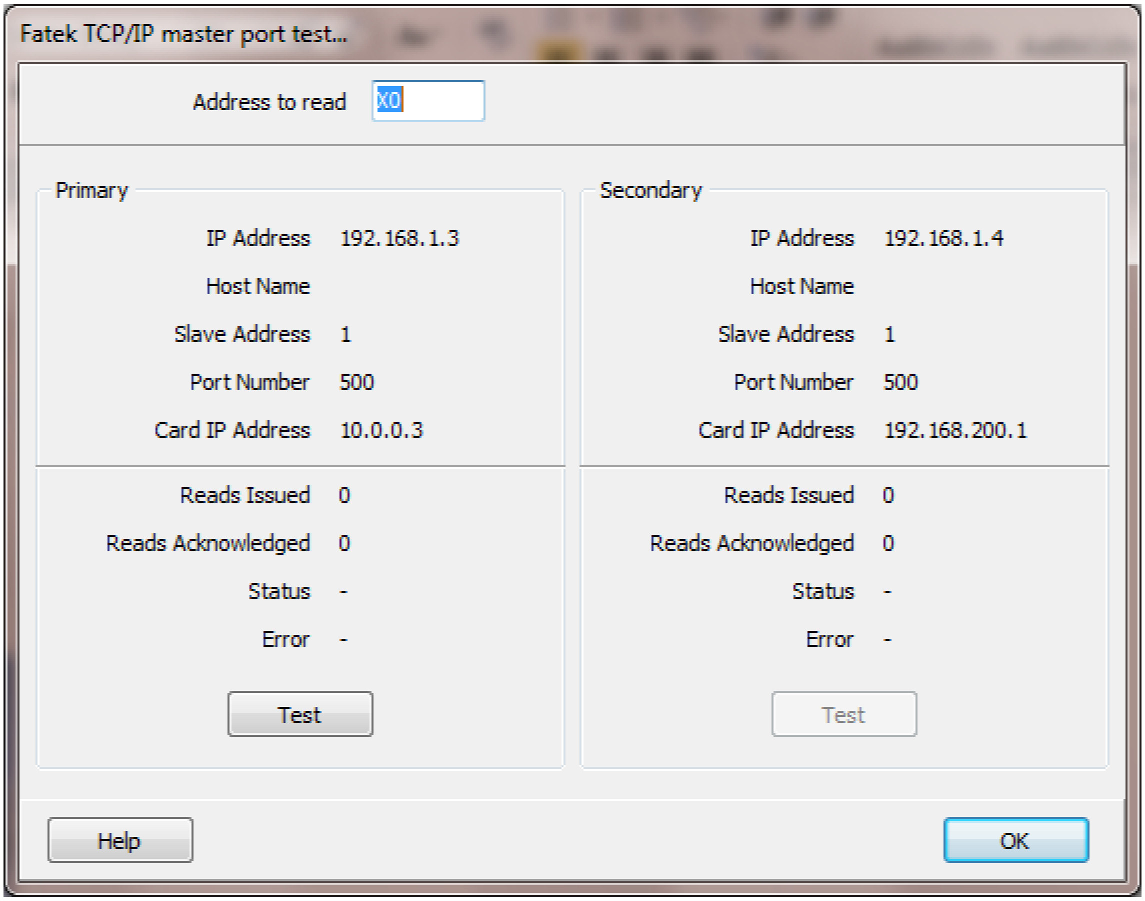
When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



Address to read: X0

Primary

IP Address: 192.168.1.3

Host Name:

Slave Address: 1

Port Number: 500

Card IP Address: 10.0.0.3

Reads Issued: 0

Reads Acknowledged: 0

Status: -

Error: -

Secondary

IP Address: 192.168.1.4

Host Name:

Slave Address: 1

Port Number: 500

Card IP Address: 192.168.200.1

Reads Issued: 0

Reads Acknowledged: 0

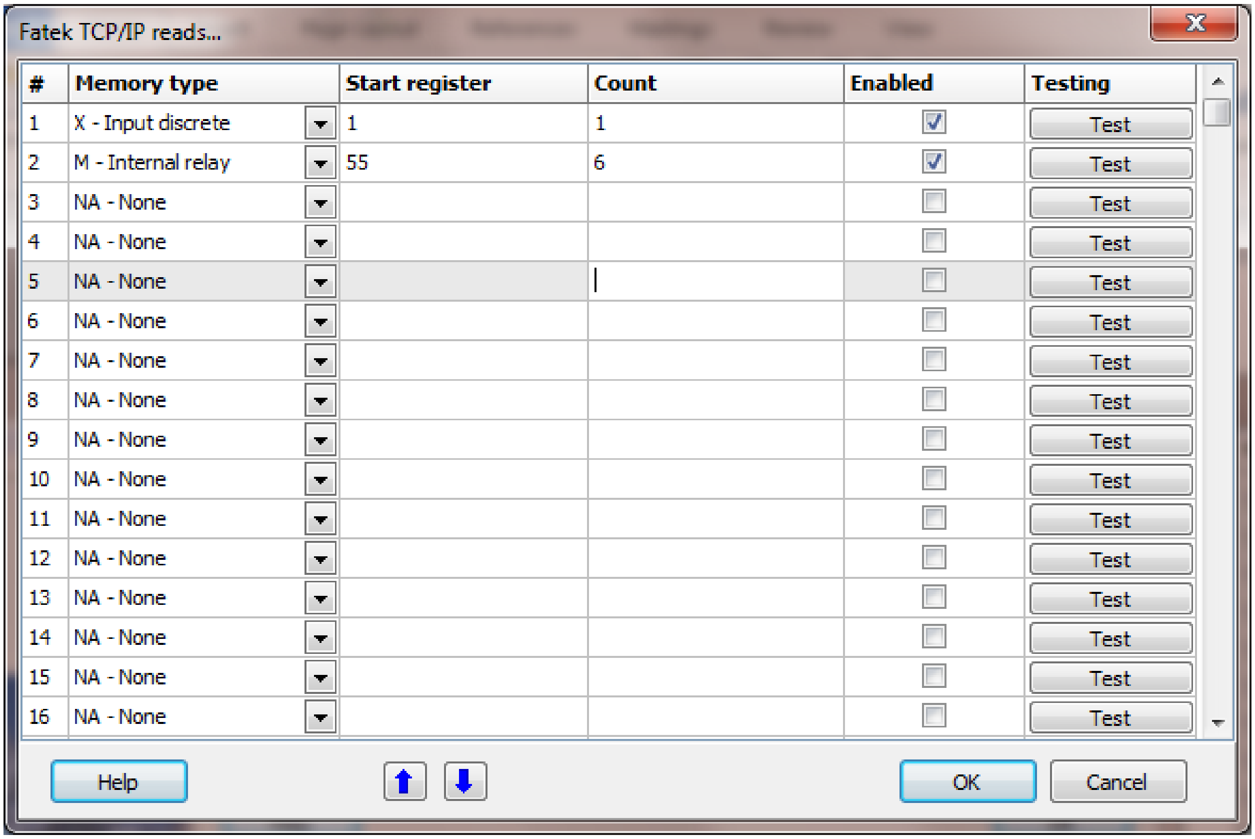
Status: -

Error: -

When the test button is selected the program will attempt to read one point of data from the device at the address entered.

If a "host name" is entered the IP address is ignored.

Reads



#	Memory type	Start register	Count	Enabled	Testing
1	X - Input discrete	1	1	☑	Test
2	M - Internal relay	55	6	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

Registers

Address Examples
X0, X28
Y0, Y4
TMR0, CTR105

Memory type

Register Type	Prefix	Data Type
Input discrete	X	Boolean
Output relay	Y	Boolean
Internal relay	M	Boolean
Step relay	S	Boolean
Timer discrete	T	Boolean
Counter discrete	C	Boolean
Timer register	TMR	Word
Counter register	CTR	Word
Register	R	Word
Data Register	D	Word

Notes:
1) The analog point 'source type' will determine if 1 or 2 words are used.
2) In WinProLadder, using a FBs-10MA PLC, the status window, R uses 1 word and DR uses 2 words, both using the same memory area.
Caution: The addressing has overlap.
R0 is word 0.
R1 is word 1.
DR0 is word 0 and 1.
DR1 is word 1 and 2.

Start register

This is the start register value for the read. Each line is one read from the HMI to the PLC requesting data from the PLC.

Count

This is the number of points to return. For Boolean types the per read point limit is 256. For Word types the per read point limit is 64.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

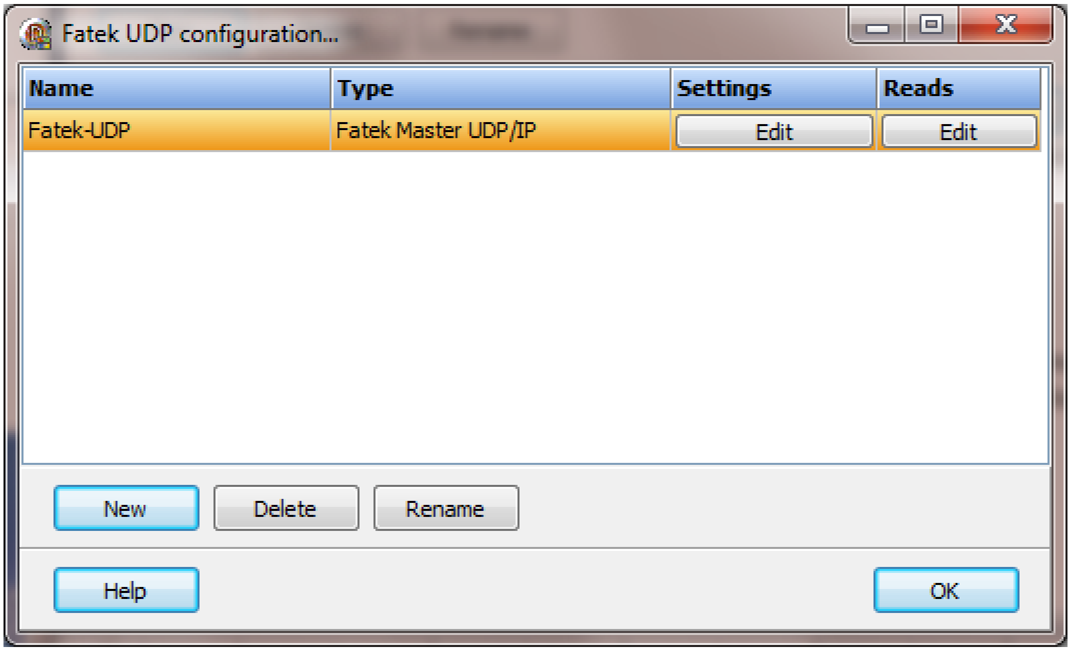
When the button is selected the program will attempt to access the data in the device using the communication parameters configured.

Error messages

No memory type selected	The memory type has not been selected.
Start out of range	The value is out of range for the type.
Count exceeds limit	The count must be 64 or less for words types; 256 or less for Boolean types.
Start + count exceeds register limit	The register plus the count exceeds the maximum address range.
Count < 1	The line must read at least on register.

FATEK UDP

Each Fatek UDP/IP object is listed in the window.


Fatek UDP configuration...
New
Delete
Rename
Help
OK

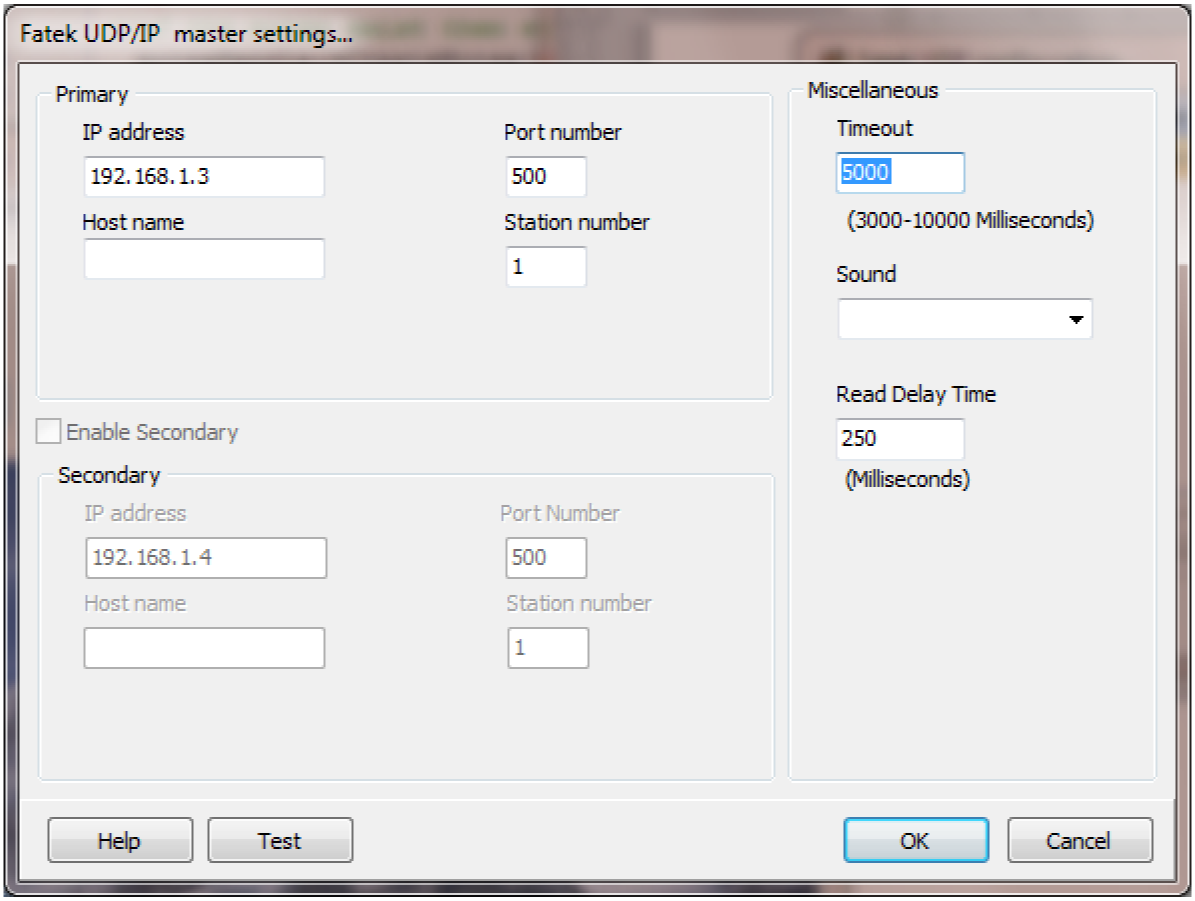
Name	Type	Settings	Reads
Fatek-UDP	Fatek Master UDP/IP	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Fatek object select the "Delete" button.

Settings


Fatek UDP/IP master settings...

Primary

IP address: 192.168.1.3

Port number: 500

Host name:

Station number: 1

☐ Enable Secondary

Secondary

IP address: 192.168.1.4

Port Number: 500

Host name:

Station number: 1

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 250

(Milliseconds)

The port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Port number

This is the port number used for UDP communication. The default port number is 500.

Note: For UDP, port 500 might be in use by the operating system. If using the 'Test' button for checking port settings and the status field is displaying 'Port opening...' the port number selected might be in use.

Station number

This is the station number of the slave device. (1 - 255)

Enable Secondary (disabled)

The "Enable Secondary" checkbox provides for a second path to be used as a hot backup. When in run mode the primary configuration is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary configuration. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary configuration, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary configuration an entry will be made in the event log and operations will return to the primary port.

If the computer has two network interface cards (NIC) the program will use the first one detected for the primary and the second one detected for the secondary. If only one NIC is detected the program will use it for the primary and the secondary.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sounds delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

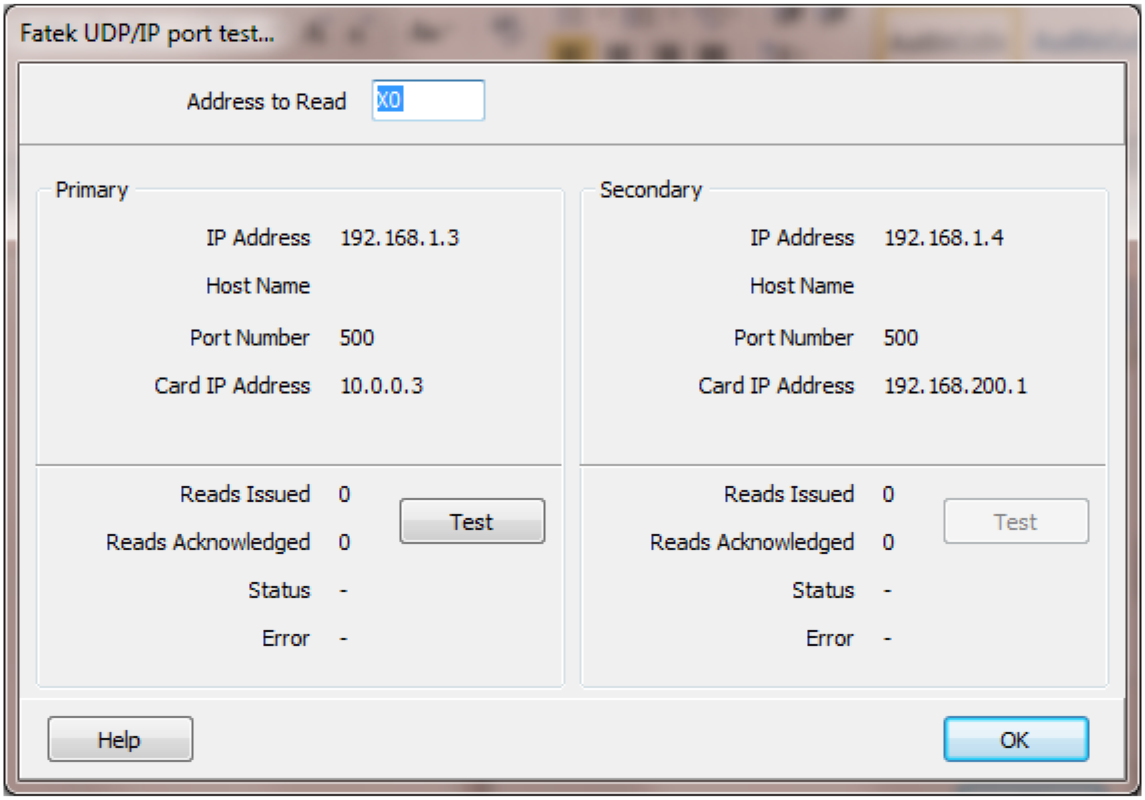
When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



Fatek UDP/IP port test...

Address to Read: X0

Primary

IP Address: 192.168.1.3

Host Name:

Port Number: 500

Card IP Address: 10.0.0.3

Reads Issued: 0

Reads Acknowledged: 0

Status: -

Error: -

Secondary

IP Address: 192.168.1.4

Host Name:

Port Number: 500

Card IP Address: 192.168.200.1

Reads Issued: 0

Reads Acknowledged: 0

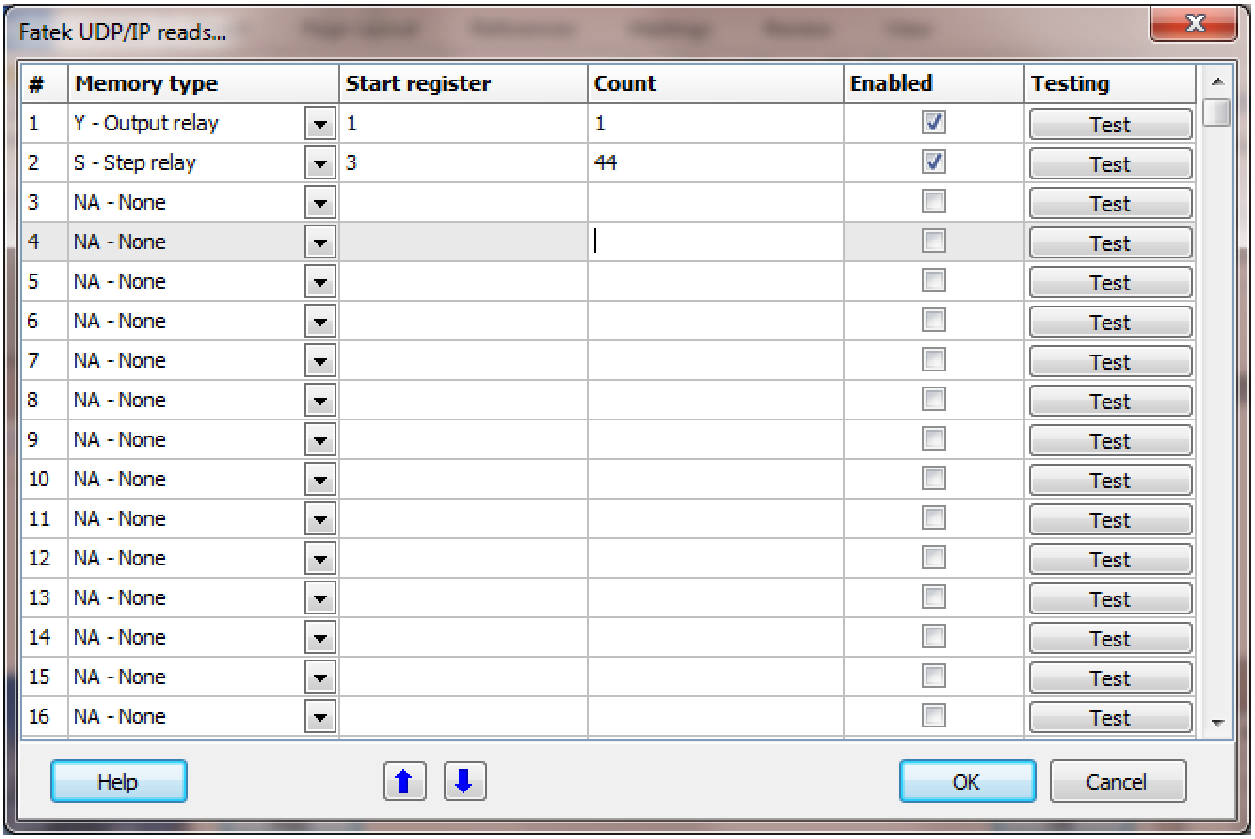
Status: -

Error: -

When the test button is selected the program will attempt to read one point of data from the device at the address entered.

If a "host name" is entered the IP address is ignored.

Reads



#	Memory type	Start register	Count	Enabled	Testing
1	Y - Output relay	1	1	☑	Test
2	S - Step relay	3	44	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

Registers

Address Examples
X0, X28
Y0, Y4
TMR0, CTR105

Memory type

Register Type	Prefix	Data Type
Input discrete	X	Boolean
Output relay	Y	Boolean
Internal relay	M	Boolean
Step relay	S	Boolean
Timer discrete	T	Boolean
Counter discrete	C	Boolean
Timer register	TMR	Word
Counter register	CTR	Word
Register	R	Word
Data Register	D	Word

Notes:
1) The analog point 'source type' will determine if 1 or 2 words are used.
2) In WinProLadder, using a FBs-10MA PLC, the status window, R uses 1 word and DR uses 2 words, both using the same memory area.
Caution: The addressing has overlap.
R0 is word 0.
R1 is word 1.
DR0 is word 0 and 1.
DR1 is word 1 and 2.

Start register

This is the start register value for the read. Each line is one read from the HMI to the PLC requesting data from the PLC.

Count

This is the number of points to return. For Boolean types the per read point limit is 256. For Word types the per read point limit is 64.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

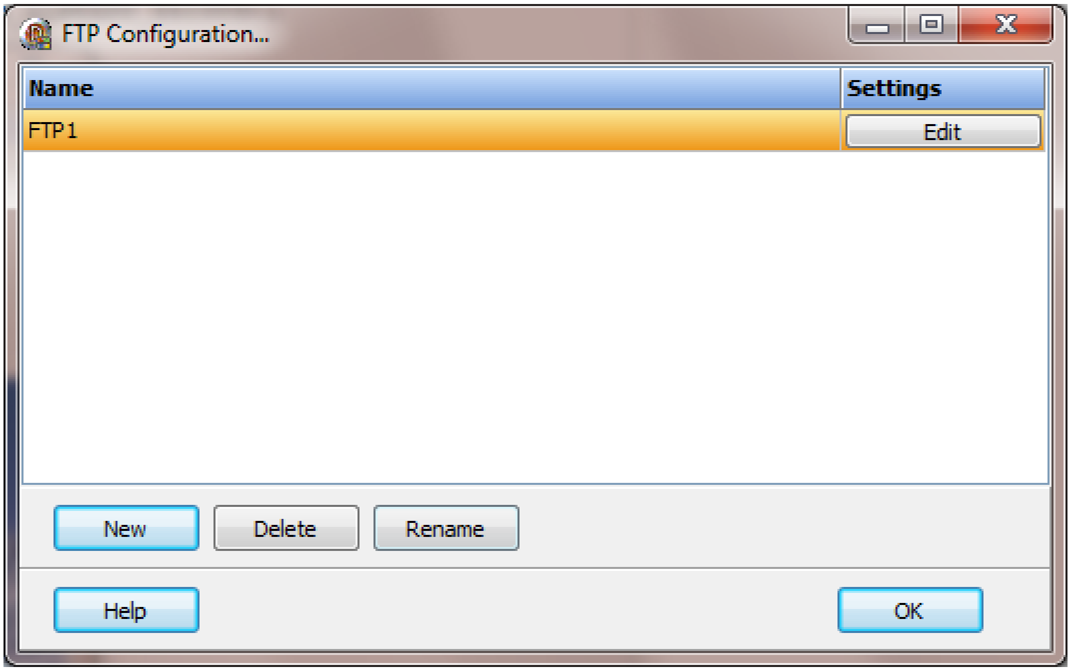
When the button is selected the program will attempt to access the data in the device using the communication parameters configured.

Error messages

No memory type selected	The memory type has not been selected.
Start out of range	The value is out of range for the type.
Count exceeds limit	The count must be 64 or less for words types; 256 or less for Boolean types.
Start + count exceeds register limit	The register plus the count exceeds the maximum address range.
Count < 1	The line must read at least on register.

FTP CLIENT

Each FTP client master object is listed in the window.


FTP Configuration...
Name
Settings
FTP1
Edit
New
Delete
Rename
Help
OK

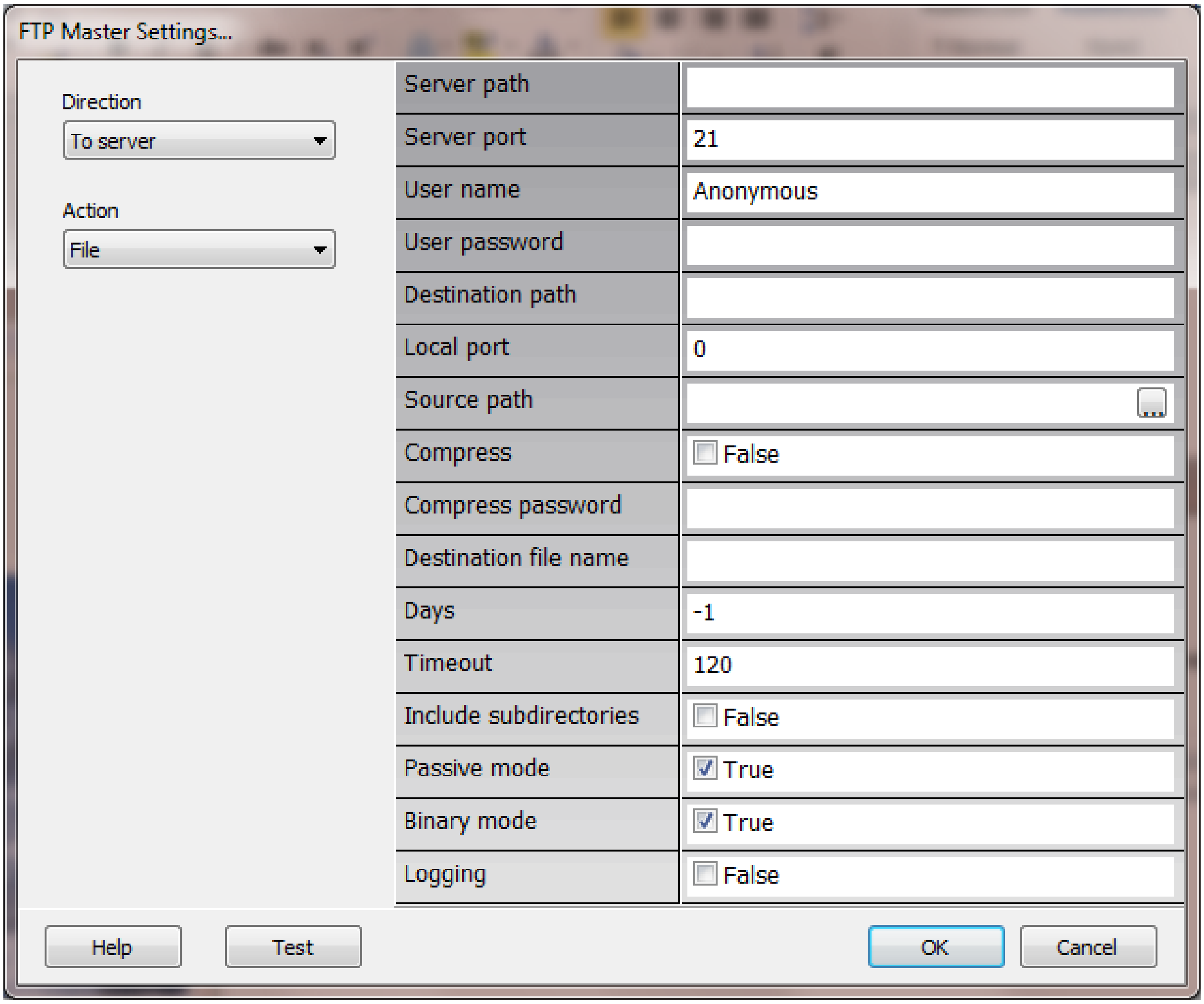
Each file transfer protocol (FTP) object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible FTP objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an FTP object select the "Delete" button.

Settings


FTP Master Settings...

Direction: To server

Action: File

Server path	
Server port	21
User name	Anonymous
User password	
Destination path	
Local port	0
Source path	
Compress	☐ False
Compress password	
Destination file name	
Days	-1
Timeout	120
Include subdirectories	☐ False
Passive mode	☑ True
Binary mode	☑ True
Logging	☐ False

The FTP object has many properties. The properties can be modified at runtime via scripting, mouse commands or a scheduled task.

Note: If the destination file exists it will be overwritten, unless the FTP host or PC OS prevents it.

Direction

Select if the file(s) are to be transfer from the PC to a server or from a server to the PC.

Action

Some actions provide for easier use of the FTP option.
File = Copy a file or files to or from the FTP host.

The following actions are only valid when the direction is "To server".

Alarm log Copy an alarm log to the FTP host.
Event log Copy an event log to the FTP host.

Server path

This is the path to the FTP host. Examples: ftp.somesite.com, anothersite.com.

Server port

The server port number. The default FTP port number is 21.

User name

This the name used to logon to the FTP server.

User password

The password used with the "user name" to logon to the FTP server. The password might not be used.

Destination path

To server: This is the path on the FTP server to place the file.
From server: This is the path on the PC to place the file or files.

If the path does not exist the transfer will fail on the FTP server or the PC.

Local port

The PC port number to use for the operation. A "0" commands the program to request any free port available from the PC OS and is the recommended value.
Passive mode: If a value other than "0" is used the program will attempt to use that port number. The port number may be in use and the operation will fail.
Active mode: If a value other than "0" is used the program will attempt to use that port number and the subsequent port number. The port numbers may be in use and the operation will fail.
If you have two or more FTP objects using the same port number, other than "0", the objects cannot be active concurrently.

Source path

To server: This is the path on the PC of the file or files to transfer. A single path is used and wild card characters are allowed.

Use wild card characters with care.
Examples:
C:\testfile.txt A single file.
C:\*.txt All files in the "C" path that use "txt" as a file extension.
C:\MyFiles\ All files in the "C:\MyFiles\" path.
C:\*.* This example would copy the complete "C" drive to the FTP server.

Note: If wild card characters or a directory path are used, "compress" (below) must be enabled.

From server: This is the path on the FTP server of the file to transfer from the server to the PC. Only a single file can be selected.

When the action is one of the "log" actions the "Source path" attribute is not used. The source file will be calculated in the FTP object based on the action and the "Days" attribute (below).

Compress

This is only used if the direction is "To server". The source is "Zip" compressed and transferred to the server.
Note: The 'zip' extension is not added to the destination file name.

Compress password

If the attribute to compress the file is enabled and a password is provided the file is compressed using the password.

Destination file name

To server: The file name on the server. This is the name the file will be saved as on the server.
From server: This file name on the PC. This is the name the file will be saved as on the PC.

Compress password

If the attribute to compress the file is enabled and a password is provided the file is compressed using the password.

Days

If the action is "File" this attribute is not applicable. For the "log" actions this attribute commands the FTP object to determine the log date/file name based on the "days" value. The value is the number of previous days. A value of "0" is the current day. A value of "-1" is the day before the current day. A value of "-2" is two days before the current day.

Example: A script is executed every night at 1:30 AM to transfer the previous days alarm log to the FTP server, set this value to -1.

Timeout

This is the number of seconds to allow the operation to complete. The underlying socket might timeout before the value is reached. The value must be 15 - 86400 seconds.

Include subdirectories

If a wild card character is used in the source path or the source path is to a directory, this attribute commands the operation to include ALL subdirectories in the operation. Use wild card characters with care. This attribute will include ALL files and ALL directories in the specified path. It will parse down to the lowest level of the directory tree.

Passive mode

The FTP server may support passive or active mode. Passive is the default mode. Non-passive mode will not normally work through a router without configuration in the router.

Binary mode

The FTP server may support ASCII or binary mode. Binary is the default mode.

Logging

This attribute is normally not used. If this attribute is enabled the FTP operation will log data to a file in the "Logging files settings". The log is written to disk after the transfer operation is finished.

State

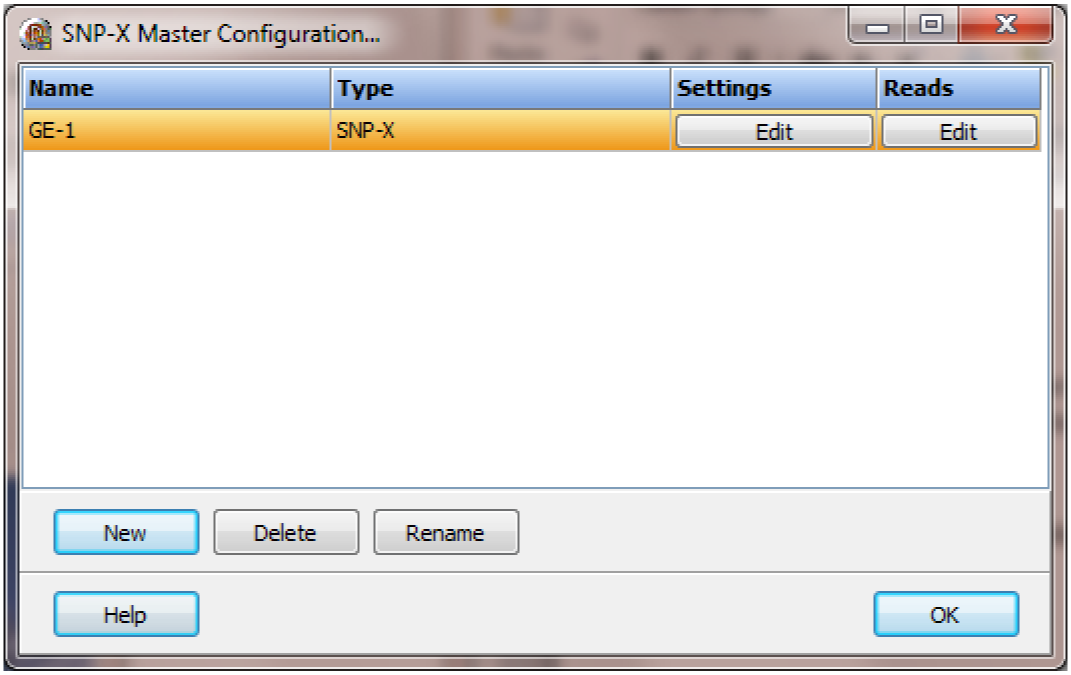
State is a special setting. It is only used at runtime to start or cancel a transfer. "True" starts the transfer and "False" cancels the transfer. It can also be used to get the current state of the port, active or inactive.

Test button

When the test button is selected the configuration settings will be applied and an attempt to transfer the files will occur.

GE SNP-X

Each SNP-X master object is listed in the window.



Name	Type	Settings	Reads
GE-1	SNP-X	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible SNP-X master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

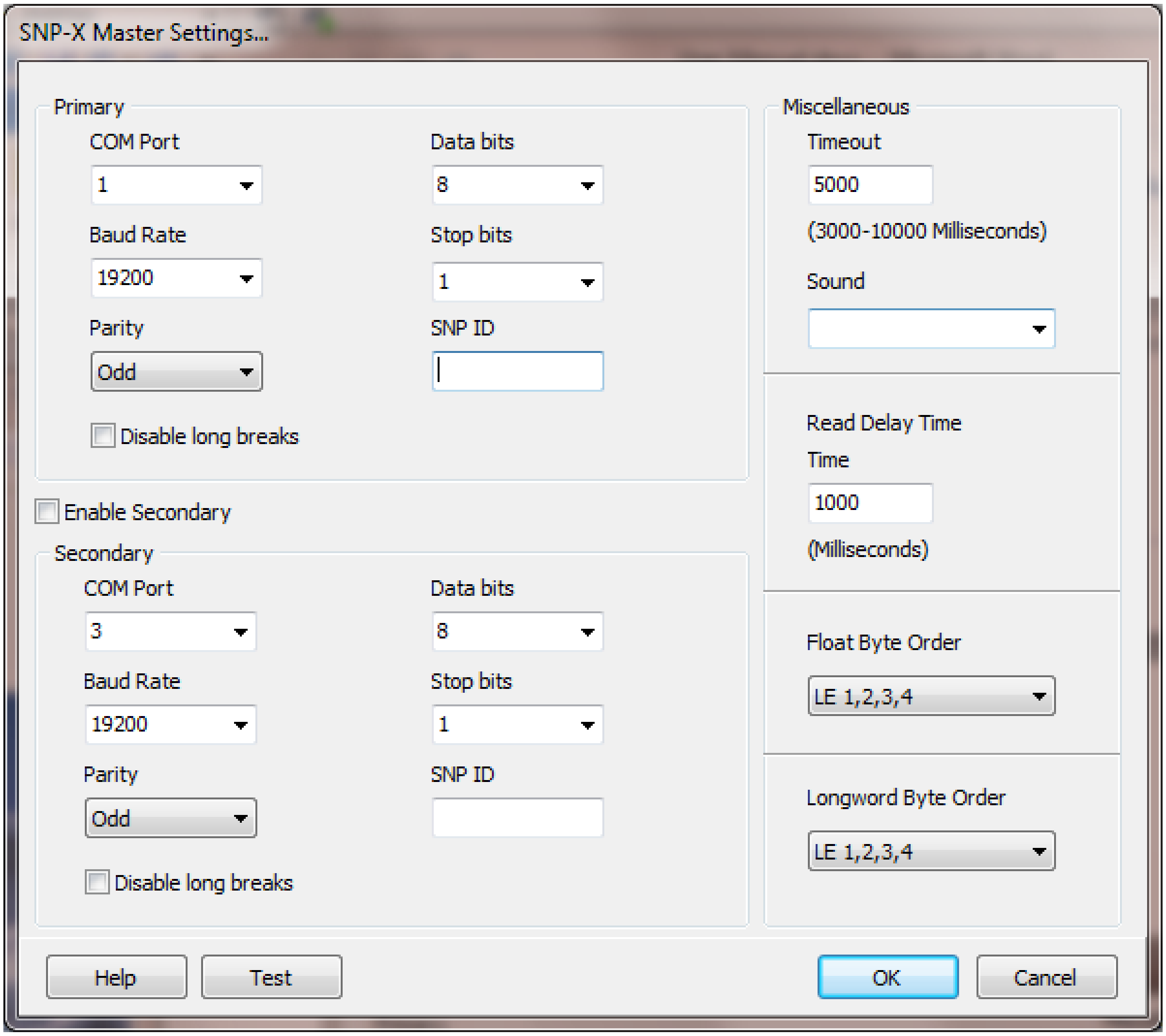
To delete a SNP-X master object select the "Delete" button.

SNP-X Commands

Name	Command	Request Code
X-Attach	88(58h)	00
X-Read	88(58h)	01
X-Write	88(58h)	02
X-Write	Buffer 84(54h)	N/A

If the amount of data to write is two bytes or less the X-Write command is used. Otherwise the X-Write and X-Write Buffer command is used.

Settings


SNP-X Master Settings...

Primary

COM Port: 1

Data bits: 8

Baud Rate: 19200

Stop bits: 1

Parity: Odd

SNP ID:

☐ Disable long breaks

☐ Enable Secondary

Secondary

COM Port: 3

Data bits: 8

Baud Rate: 19200

Stop bits: 1

Parity: Odd

SNP ID:

☐ Disable long breaks

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time

Time: 1000

(Milliseconds)

Float Byte Order: LE 1,2,3,4

Longword Byte Order: LE 1,2,3,4

The serial port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

SNP ID

The maximum length is seven bytes. This may be limited by the slave device. The values of the 7 bytes are further restricted to the ASCII characters `0' through `9' inclusive, and `A' through `F' inclusive (must be capital letters). Null (blank SNP ID) can be used for point to point serial connections.

Disable Long Breaks

The protocol requires the serial transmit line to be put in a "space" state for 3 character times before the attach command is issued to the slave. Some devices do not require the "long break" to accept and respond to the attach command. (Under Windows the length of time for 3 characters, at the current configured baud rate, is approximate.)

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.
When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:
The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

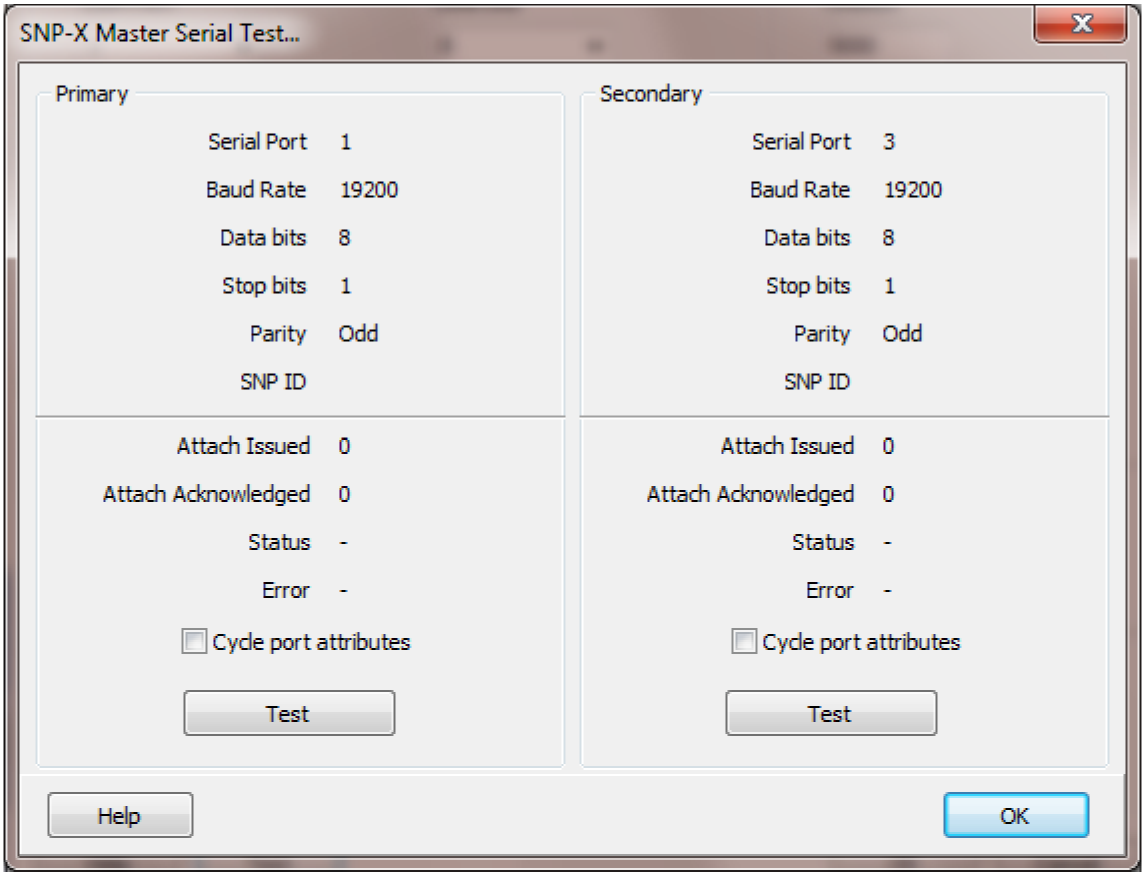
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button



Primary

Serial Port 1
Baud Rate 19200
Data bits 8
Stop bits 1
Parity Odd
SNP ID
Attach Issued 0
Attach Acknowledged 0
Status -
Error -
☐ Cycle port attributes

Secondary

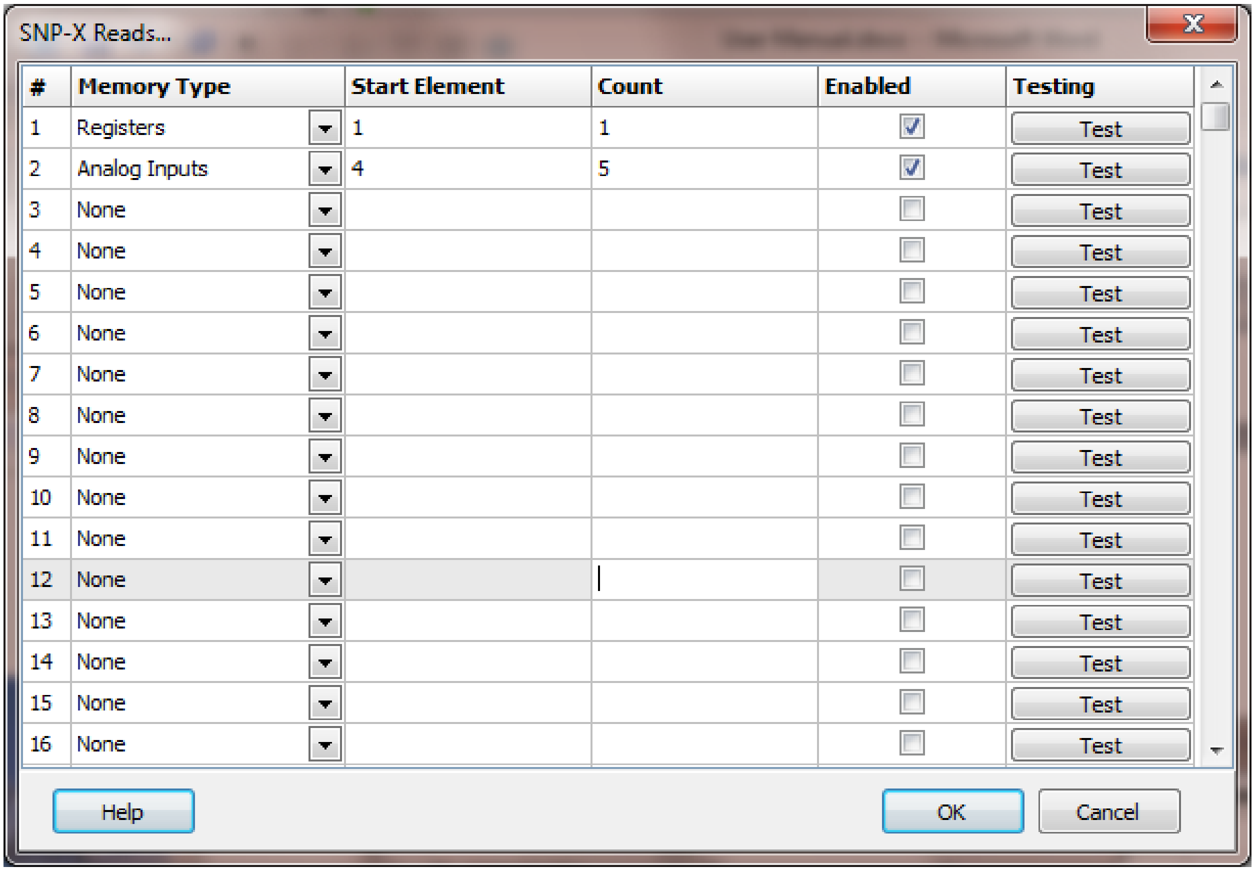
Serial Port 3
Baud Rate 19200
Data bits 8
Stop bits 1
Parity Odd
SNP ID
Attach Issued 0
Attach Acknowledged 0
Status -
Error -
☐ Cycle port attributes

When the test button is selected the program will attempt to "attach" to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Element	Count	Enabled	Testing
1	Registers	1	1	☑	Test
2	Analog Inputs	4	5	☑	Test
3	None			☐	Test
4	None			☐	Test
5	None			☐	Test
6	None			☐	Test
7	None			☐	Test
8	None			☐	Test
9	None			☐	Test
10	None			☐	Test
11	None			☐	Test
12	None			☐	Test
13	None			☐	Test
14	None			☐	Test
15	None			☐	Test
16	None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the GE defined addressing for access to the data in the slave. Please refer to the GE documentation. Exception: The "%" is not required.

Example address:

I1, AQ6789, R45909
AI421/1, R876/16

Notes:
1. Do not use leading zeros in the address string.
2. When modifying a bit in a non-bit register, AI , AQ , R, all other bits in the register are cleared.

Memory Type

The supported GE defined memory areas.

Register Type	Prefix
Registers	R
Analog Inputs	AI
Analog Outputs	Q
Discrete Inputs	I
Discrete Outputs	Q
Discrete Temporaries	T
Discrete Internals	M
SA Discretes	SA
SB Discretes	SB
SC Discretes	SC
S Discretes	S
Genius Global Data	G

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values.

Count

The number of registers to read for the request. The memory type and slave device determine the maximum number of registers that can be read in a single request. The protocol response has a limit of 1000 bytes of data.

Registers, Analog Inputs and Analog Outputs have a maximum of 500 registers per request. (2 bytes per register)

Discrete Inputs, Discrete Outputs, Discrete Temporaries, Discrete Internals, SA Discretes, SB Discretes, SC Discretes, S Discretes and Genius Global Data have a limit of 8000 registers per request. (1 bit per register)

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

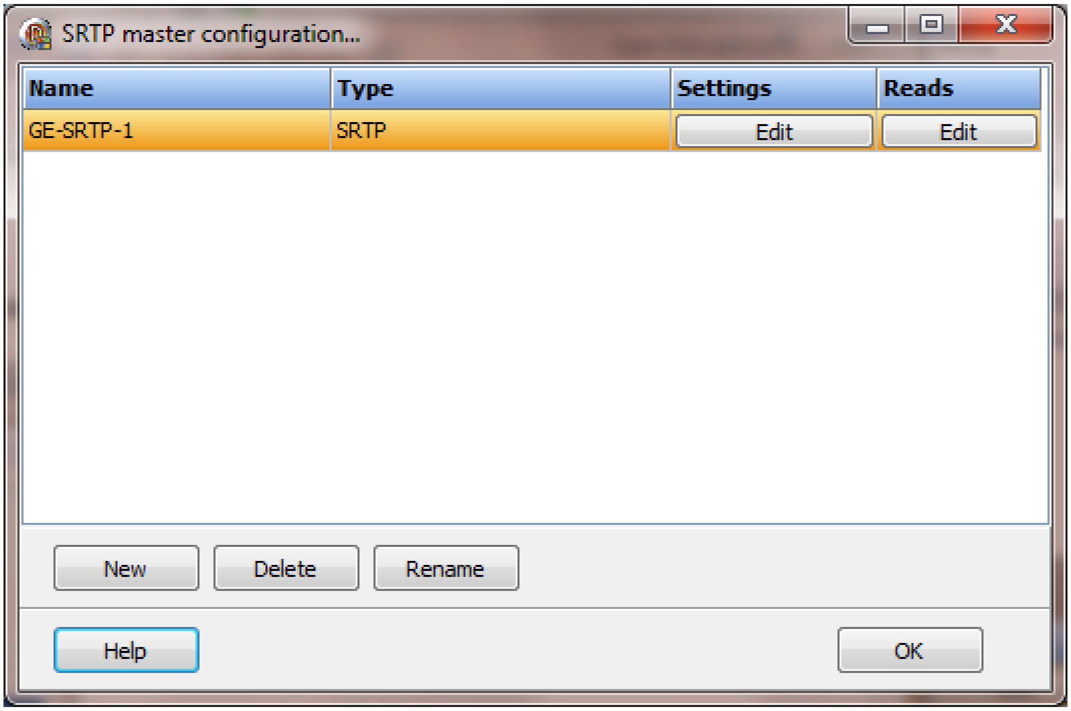
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains "Error : 0F:04" means "Invalid slave memory address or range in X-Request message". For other "codes" refer to the SNP-X specification. (GE document GFK-0582C)

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 1 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Bit data must be byte aligned	The start register for bit data must be on a byte boundary. (1, 9, 17, ...)

GE SRTP

Each SRTP object is listed in the window.


SRTP master configuration...
New
Delete
Rename
Help
OK

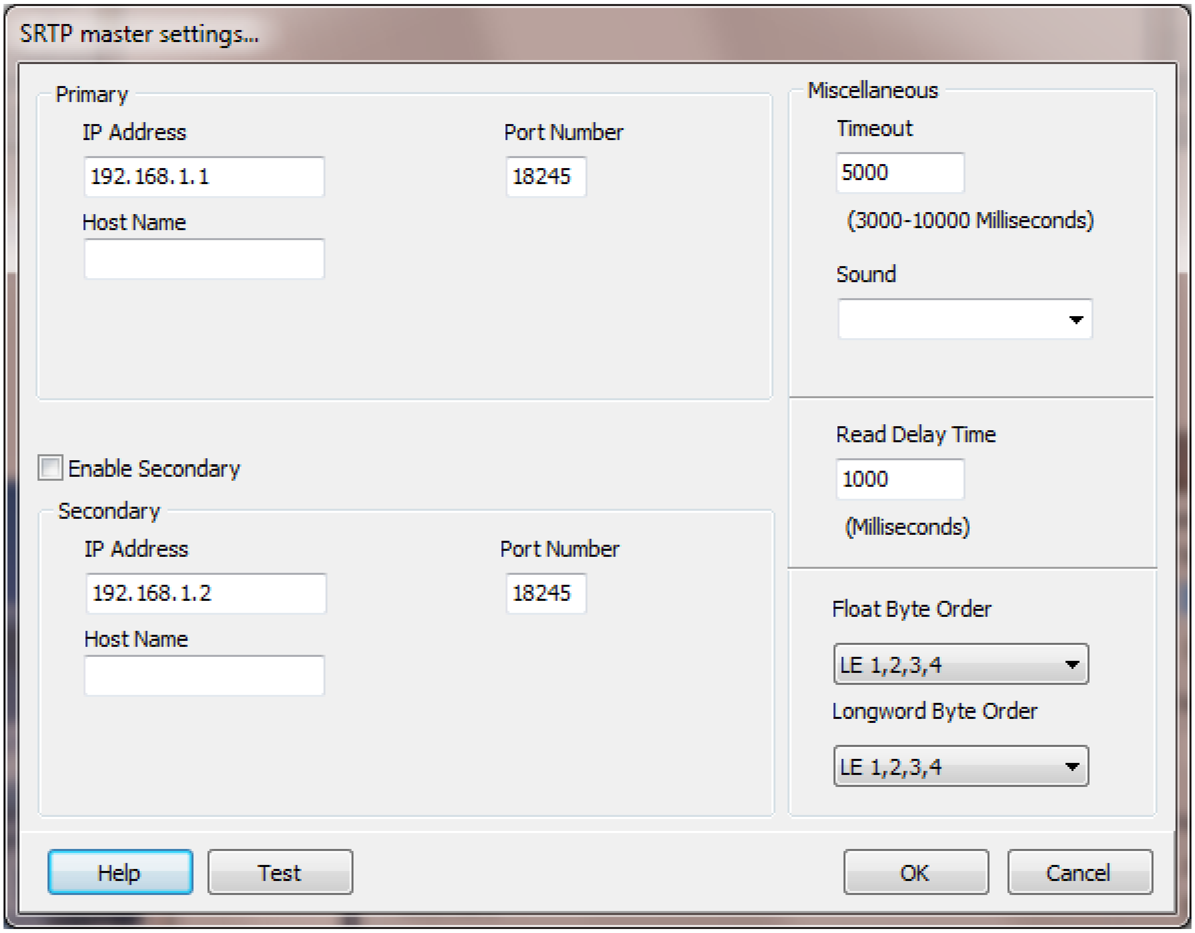
Name	Type	Settings	Reads
GE-SRTP-1	SRTP	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible SRTP master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a SRTP master object select the "Delete" button.

Settings



IP Address: 192.168.1.1
Port Number: 18245
Host Name:
Timeout: 5000
(3000-10000 Milliseconds)
Sound:
☐ Enable Secondary
IP Address: 192.168.1.2
Port Number: 18245
Host Name:
Read Delay Time: 1000
(Milliseconds)
Float Byte Order: LE 1,2,3,4
Longword Byte Order: LE 1,2,3,4

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sounds delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

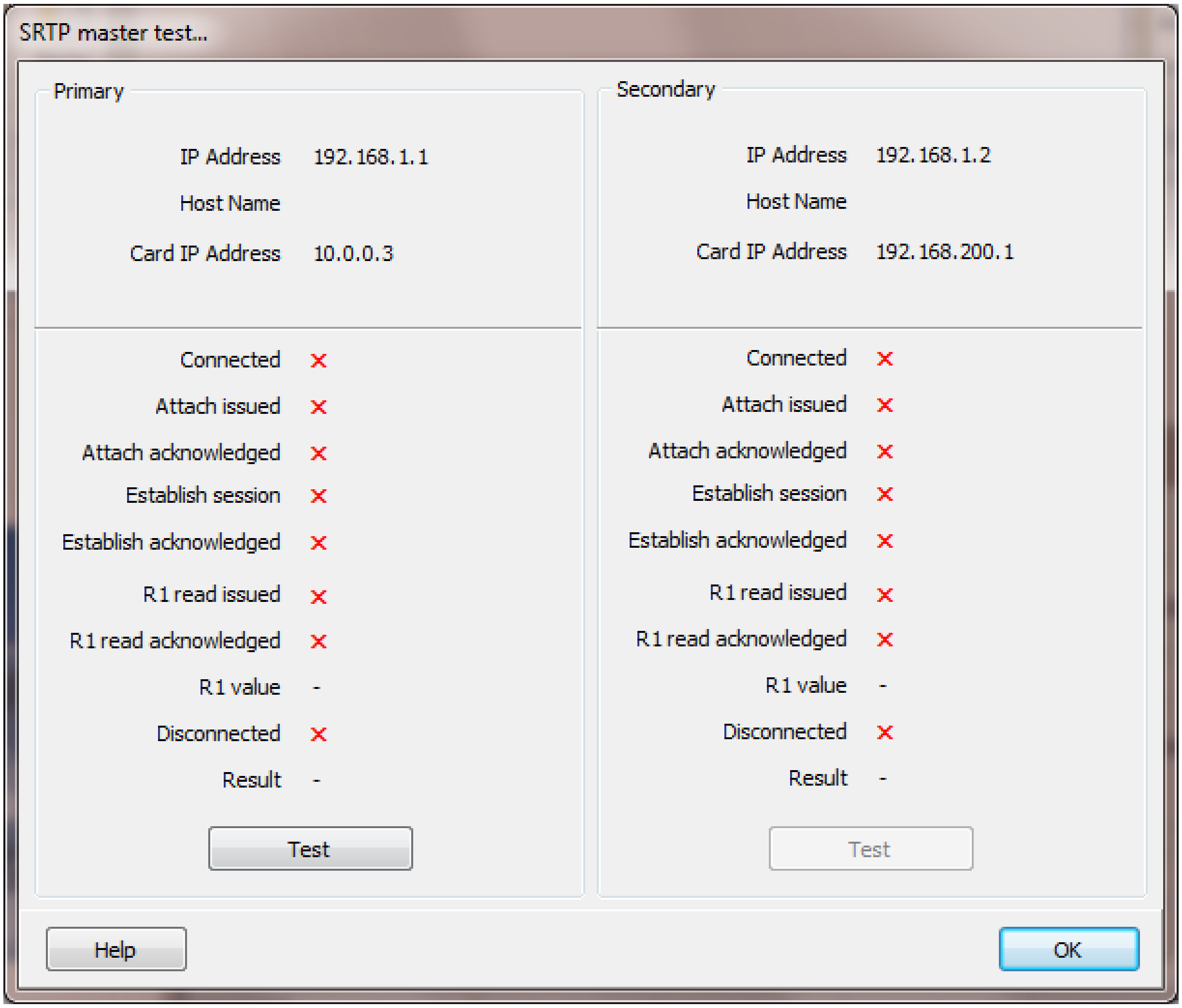
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button



Primary

IP Address 192.168.1.1
Host Name
Card IP Address 10.0.0.3

Connected ✗
Attach issued ✗
Attach acknowledged ✗
Establish session ✗
Establish acknowledged ✗
R1 read issued ✗
R1 read acknowledged ✗
R1 value -
Disconnected ✗
Result -

Secondary

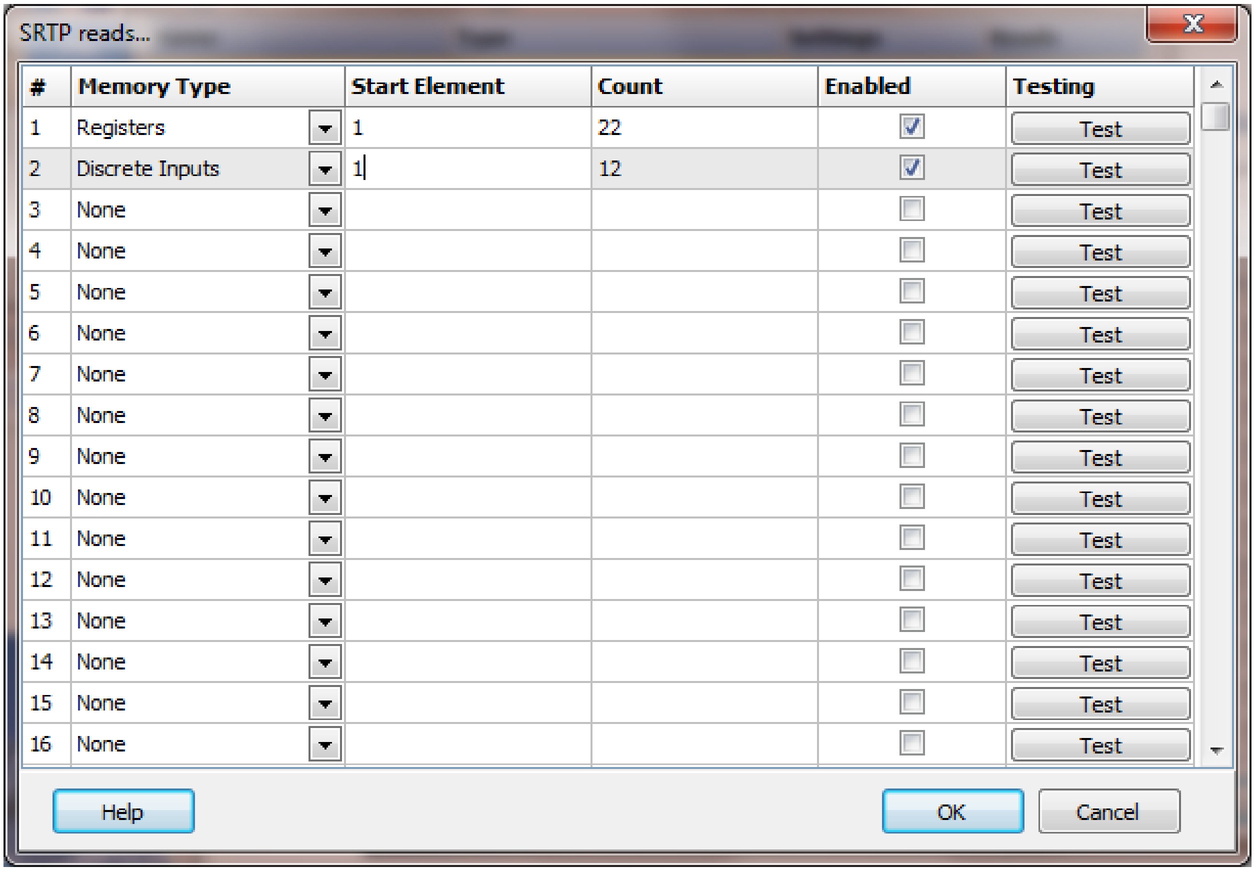
IP Address 192.168.1.2
Host Name
Card IP Address 192.168.200.1

Connected ✗
Attach issued ✗
Attach acknowledged ✗
Establish session ✗
Establish acknowledged ✗
R1 read issued ✗
R1 read acknowledged ✗
R1 value -
Disconnected ✗
Result -

When the test button is selected the program will attempt to "attach", establish a connection and read the contents of register 1.

The program will attempt to use the communication parameters configured.

Reads


SRTP reads...

#	Memory Type	Start Element	Count	Enabled	Testing
1	Registers	1	22	☑	Test
2	Discrete Inputs	1	12	☑	Test
3	None			☐	Test
4	None			☐	Test
5	None			☐	Test
6	None			☐	Test
7	None			☐	Test
8	None			☐	Test
9	None			☐	Test
10	None			☐	Test
11	None			☐	Test
12	None			☐	Test
13	None			☐	Test
14	None			☐	Test
15	None			☐	Test
16	None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the GE defined addressing for access to the data in the slave. Please refer to the GE documentation. Exception: The "%" is not required.

Example address:

I1, AQ6789, R45909
AI421/1, R876/16

Notes:
1. Do not use leading zeros in the address string.
2. When modifying a bit in a non-bit register, AI , AQ , R, all other bits in the register are cleared.

Memory Type

The supported GE defined memory areas.

Register Type	**Prefix**
Registers	R
Analog Inputs	AI
Analog Outputs	Q
Discrete Inputs	I
Discrete Outputs	Q
Discrete Temporaries	T
Discrete Internals	M
SA Discretes	SA
SB Discretes	SB
SC Discretes	SC
S Discretes	S
Genius Global Data	G

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values.

Count

The number of registers to read for the request. The memory type and slave device determine the maximum number of registers that can be read in a single request. The protocol response has a limit of 1000 bytes of data.

Registers, Analog Inputs and Analog Outputs have a maximum of 500 registers per request. (2 bytes per register)

Discrete Inputs, Discrete Outputs, Discrete Temporaries, Discrete Internals, SA Discretes, SB Discretes, SC Discretes, S Discretes and Genius Global Data have a limit of 8000 registers per request. (1 bit per register)

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

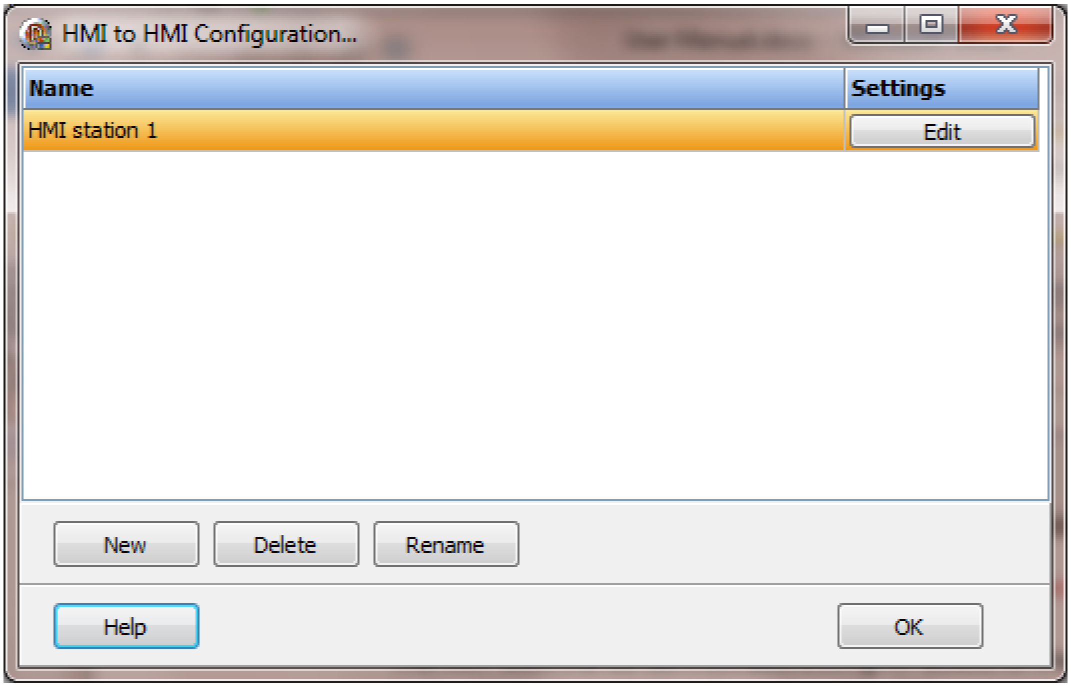
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. If the error string contains "Error : 0F:04" means "Invalid slave memory address or range in X-Request message". For other "codes" refer to the SNP-X specification. (GE document GFK-0582C)

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 1 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Bit data must be byte aligned	The start register for bit data must be on a byte boundary. (1, 9, 17, ...)

HMI <-> HMI

Each HMI <-> HMI master object is listed in the window.



To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible HMI <-> HMI master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a HMI <-> HMI master object select the "Delete" button.

Question: I have an HMI project on a computer (A) and I want to use a second computer (B) to access the points on computer A.

Answer:

The fastest method is to clone the complete project from computer A, then modify the project as necessary for the B computer.

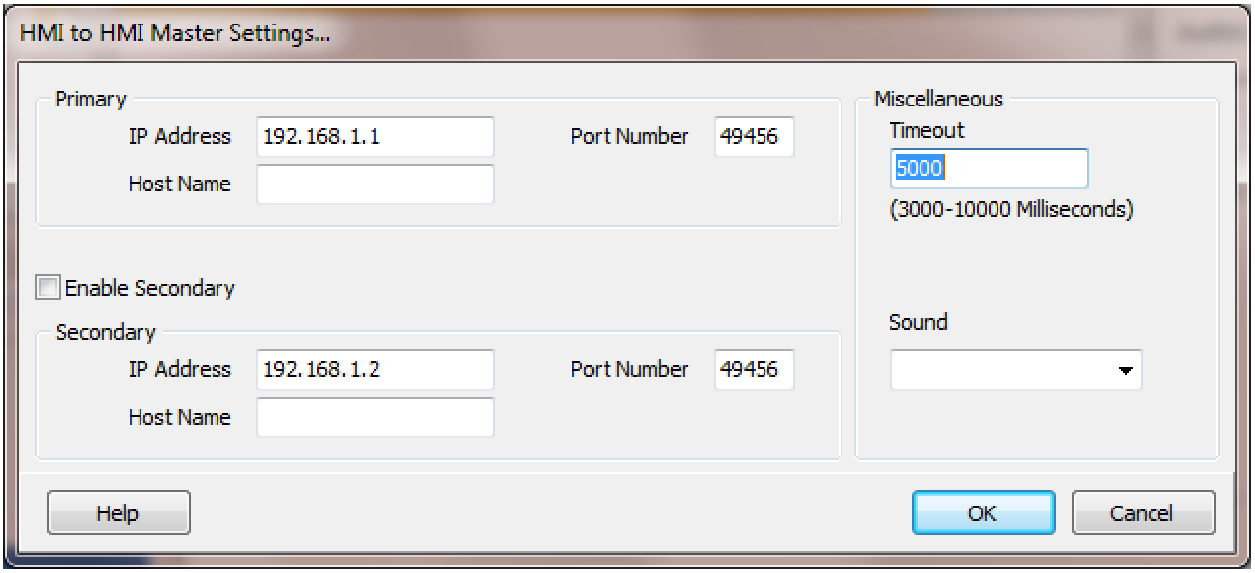
1) Duplicate the project directory. This new directory/project will be the project for B computer.
2) On computer A, enable the HMI <> HMI server. That is the only step for computer A.
3) On computer B, delete all communication ports. Computer B can use other communications ports but, for this example, computer B will only communicate with computer A.
4) Create an HMI <-> HMI port and give it a name. For this example we will call it "ClientOne". Enter the IP address of computer A in the settings.
5) Depending on how many points the project contains, these next steps can be done by hand or with Excel. On computer B,

A) Export the points to an Excel file.
B) Open the file.
C) Copy all the tagnames for the digital points (excluding digital host points).
D) Paste the tagnames in the source address for the digital points. Now the tagname and source address are the same. You can change the point tagname as is needed. The source address must be an exact match to the point tagname in computer A.
E) Repeat step D for the analog points (excluding analog host points), as required.
F) Change the port name to "ClientOne" for all the digital and analog points (excluding host points).
H) Save the file and exit Excel.
I) Import the file, overwriting the points.
J) Save the project.

That is all. Start runtime monitoring for computer A, repeat for computer B and you should see the same data on both computers.

If the computers are not communicating, watchdog timeouts, etc. the most common causes:
1) The IP address in the slave port "ClientOne" in this example, is not correct.
2) The port is blocked on A and/or B computer (firewall or virus protection) or blocked in a router. The port number to use is configured on the A computer and in "ClientOne" of computer B.
3) There are many other possible reasons for failure to communicate but, they are outside the scope of the HMI.

Settings


HMI to HMI Master Settings...
Primary
IP Address
192.168.1.1
Port Number
49456
Host Name
☐ Enable Secondary
Secondary
IP Address
192.168.1.2
Port Number
49456
Host Name
Miscellaneous
Timeout
5000
(3000-10000 Milliseconds)
Sound
Help
OK
Cancel

The port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

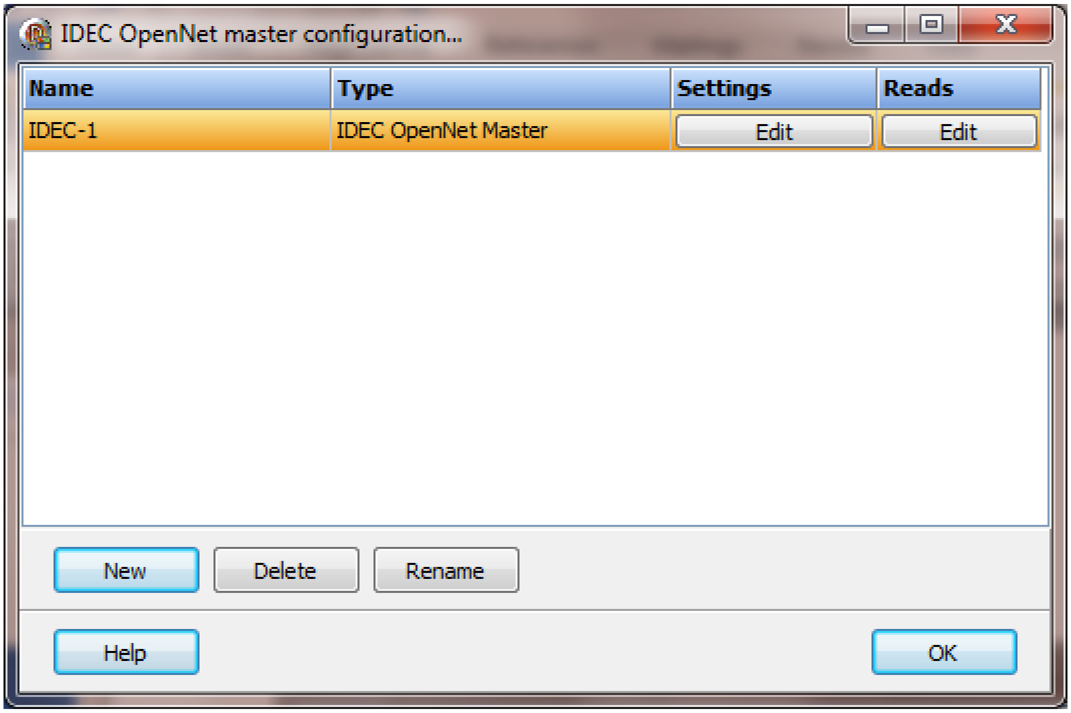
Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sounds delete the value in the sound name field.

IDEC (OpenNet)

Each IDEC OpenNet (IDEC) master object is listed in the window.

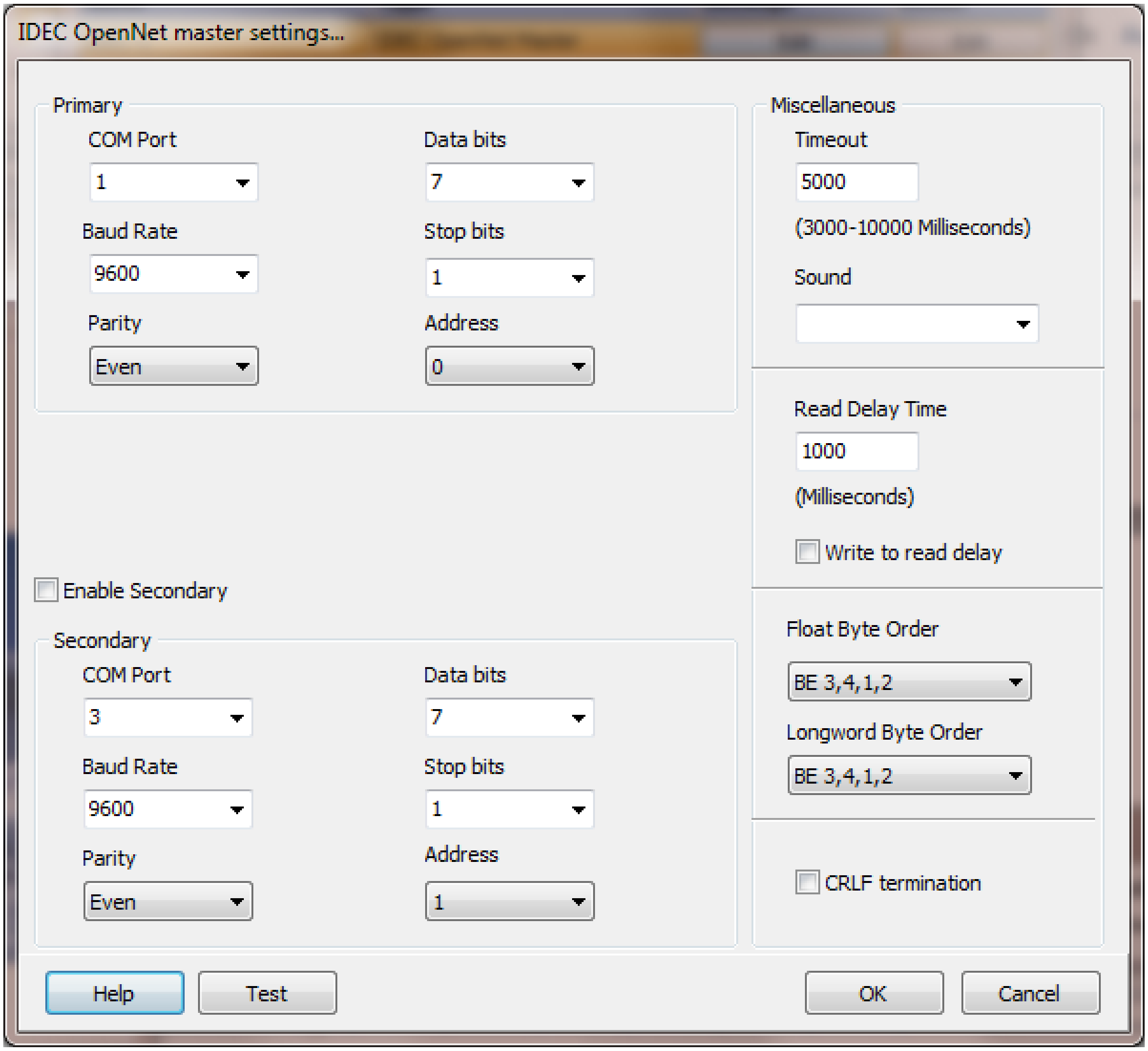

IDEC OpenNet master configuration...
Name
Type
Settings
Reads
IDEC-1
IDEC OpenNet Master
Edit
Edit
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible IDEC master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an IDEC master object select the "Delete" button.

Settings


IDEC OpenNet master settings...

Primary
COM Port: 1
Baud Rate: 9600
Parity: Even
Data bits: 7
Stop bits: 1
Address: 0

☐ Enable Secondary

Secondary
COM Port: 3
Baud Rate: 9600
Parity: Even
Data bits: 7
Stop bits: 1
Address: 1

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time: 1000
(Milliseconds)
☐ Write to read delay

Float Byte Order: BE 3,4,1,2
Longword Byte Order: BE 3,4,1,2

☐ CRLF termination

The serial port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary

communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.
If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Address

The address of the slave device.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sounds delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

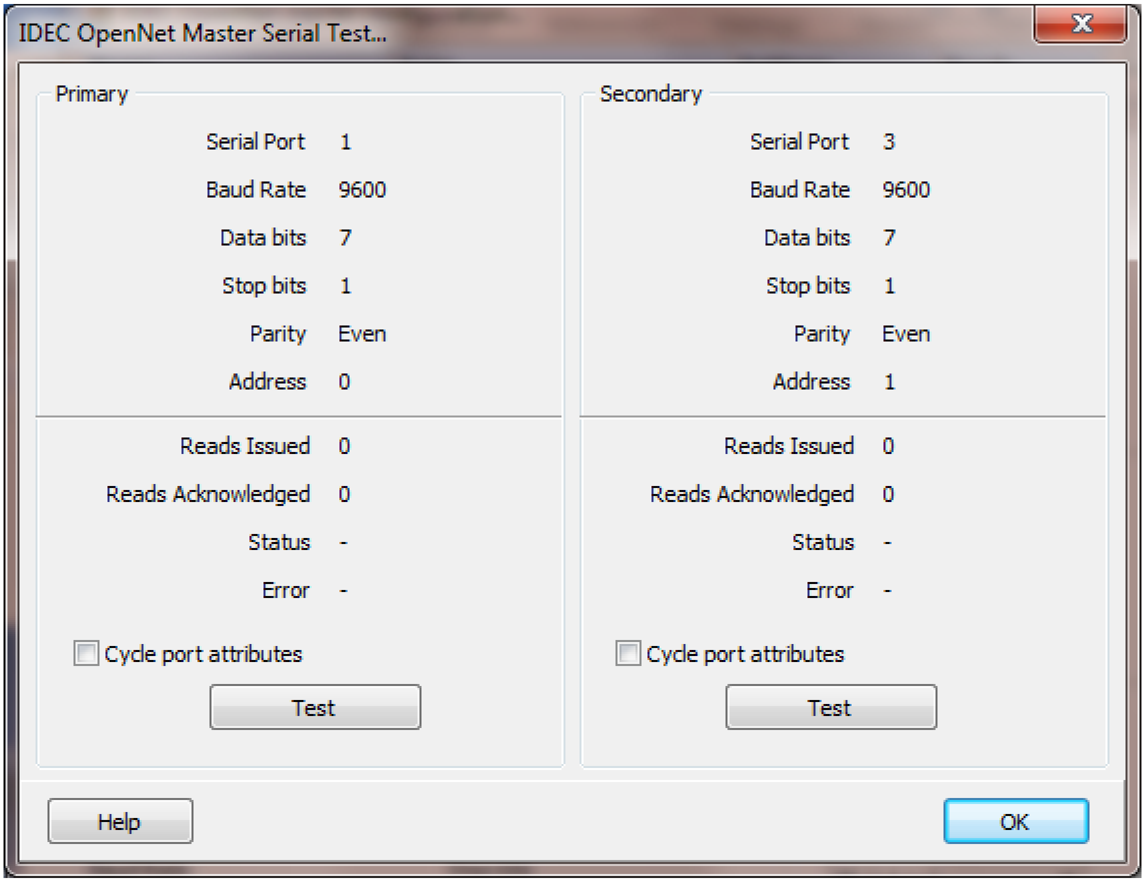
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button


IDEC OpenNet Master Serial Test...

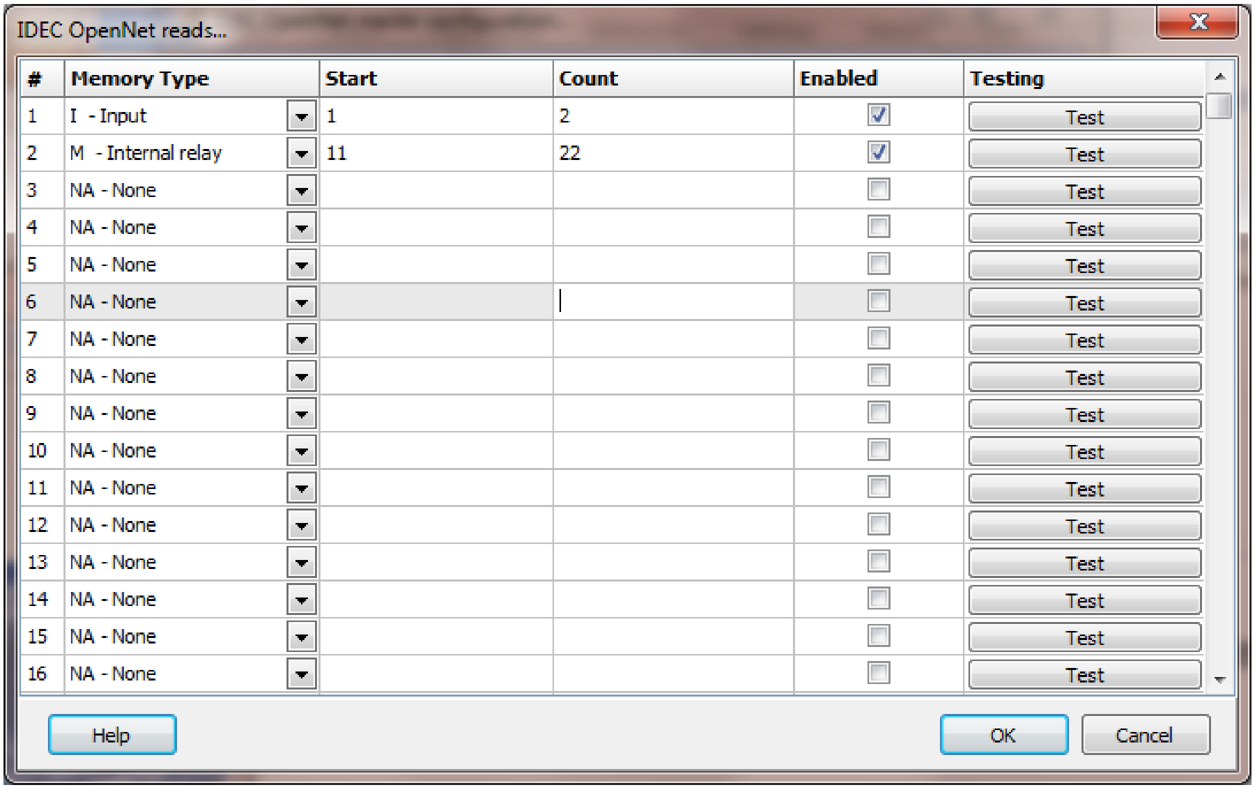
	Primary	Secondary
Serial Port	1	3
Baud Rate	9600	9600
Data bits	7	7
Stop bits	1	1
Parity	Even	Even
Address	0	1
Reads Issued	0	0
Reads Acknowledged	0	0
Status	-	-
Error	-	-
Cycle port attributes	☐	☐

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start	Count	Enabled	Testing
1	I - Input	1	2	☑	Test
2	M - Internal relay	11	22	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.
The HMI uses the following addressing for access to the data in the slave.

Example address:
I1, Q74, TP75, CC43, W3

Register Type

The supported registers.

Register Type	Prefix	Data Type
Input	I	Bit
Output	Q	Bit
Internal relay	M	Bit
Link relay	O	Bit
Line register	L	Byte
Shift register	R	Byte
Timer	T	Bit
Counter	C	Bit
Data register	D	Word
Calendar/clock	W	Word

Timer preset	TP	Word
Timer current	TC	Word
Counter preset	CP	Word
Counter current	CC	Word
High speed counter preset	HP	Longword
High speed counter current	HC	Longword

For input, output, internal relay and link relay the last digit of the start must be octal.

Start

The starting address to read. The different memory areas have different counts. Refer to the slave device for legal register values. Enter the starting register value, in octal.

Count

The number of registers to read for the request in decimal. The memory type and slave device determine the maximum number of registers that can be read. The protocol has a maximum of 200 bytes of data.

Register Type	**Count**
Input	bytes
Output	bytes
Internal relay	bytes
Link relay	bytes
Line register	bytes
Shift register	bytes
Timer	number of timers, maximum 48
Counter	number of counters, maximum 48
Data register	words - maximum 100 words (200 bytes)
Calendar/clock	7 - the start must be 0 and the count must be 7
High speed counter	0 - the start is the high speed counter number

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

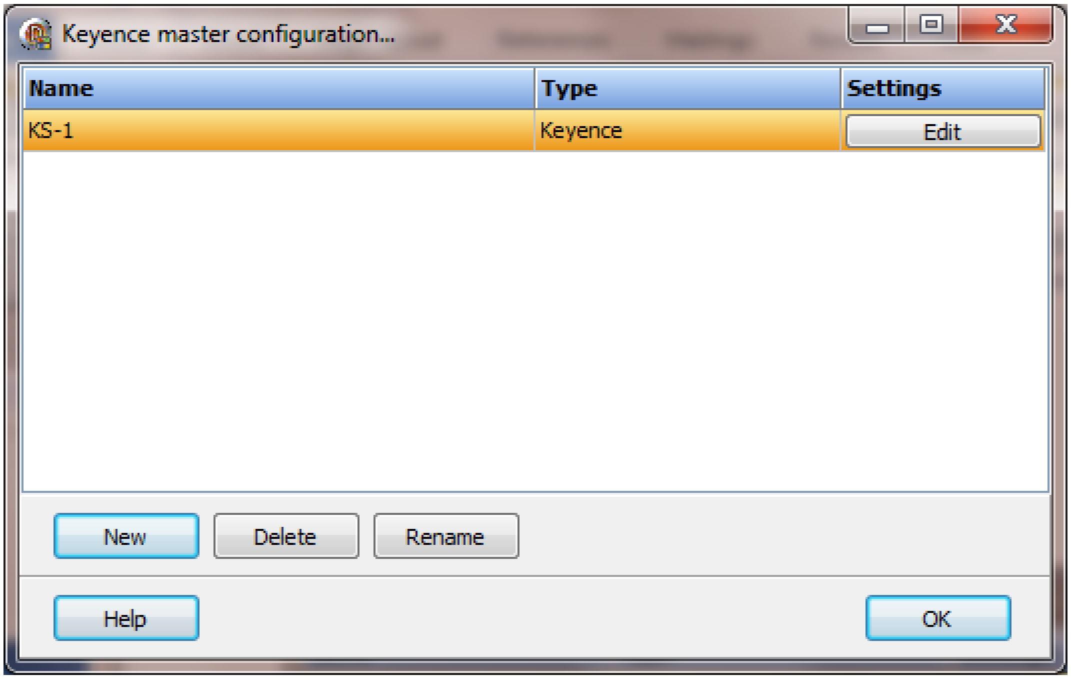
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start not in range for the memory type.
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Last digit is not octal	The last digit of the selected memory type must be 0 - 7.

KEYENCE

Each Keyence master object is listed in the window.

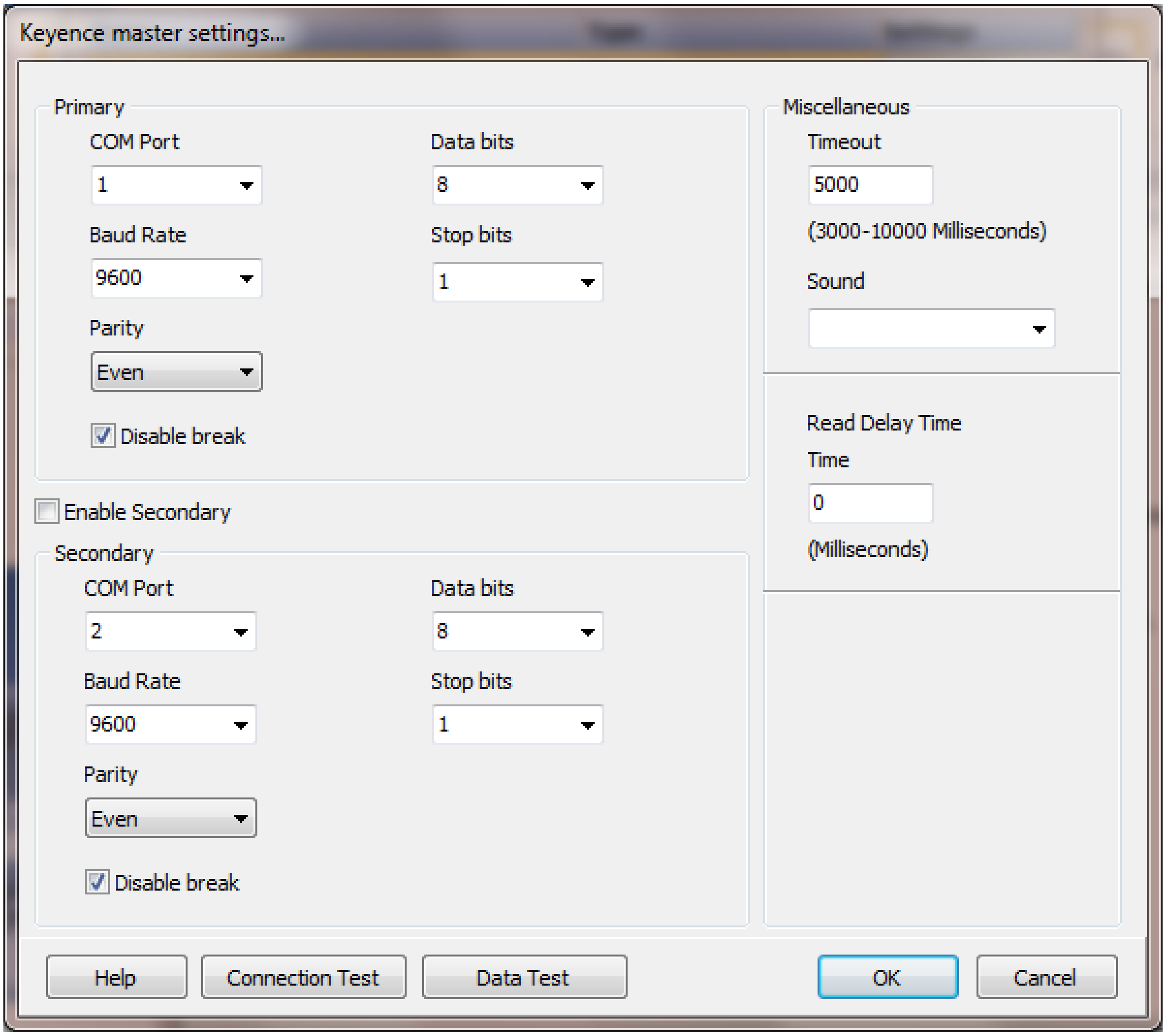

Keyence master configuration...
Name
Type
Settings
KS-1
Keyence
Edit
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Keyence master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Keyence master object select the "Delete" button.

Settings



Primary

COM Port: 1

Data bits: 8

Baud Rate: 9600

Stop bits: 1

Parity: Even

☑ Disable break

☐ Enable Secondary

Secondary

COM Port: 2

Data bits: 8

Baud Rate: 9600

Stop bits: 1

Parity: Even

☑ Disable break

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time

Time: 0

(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

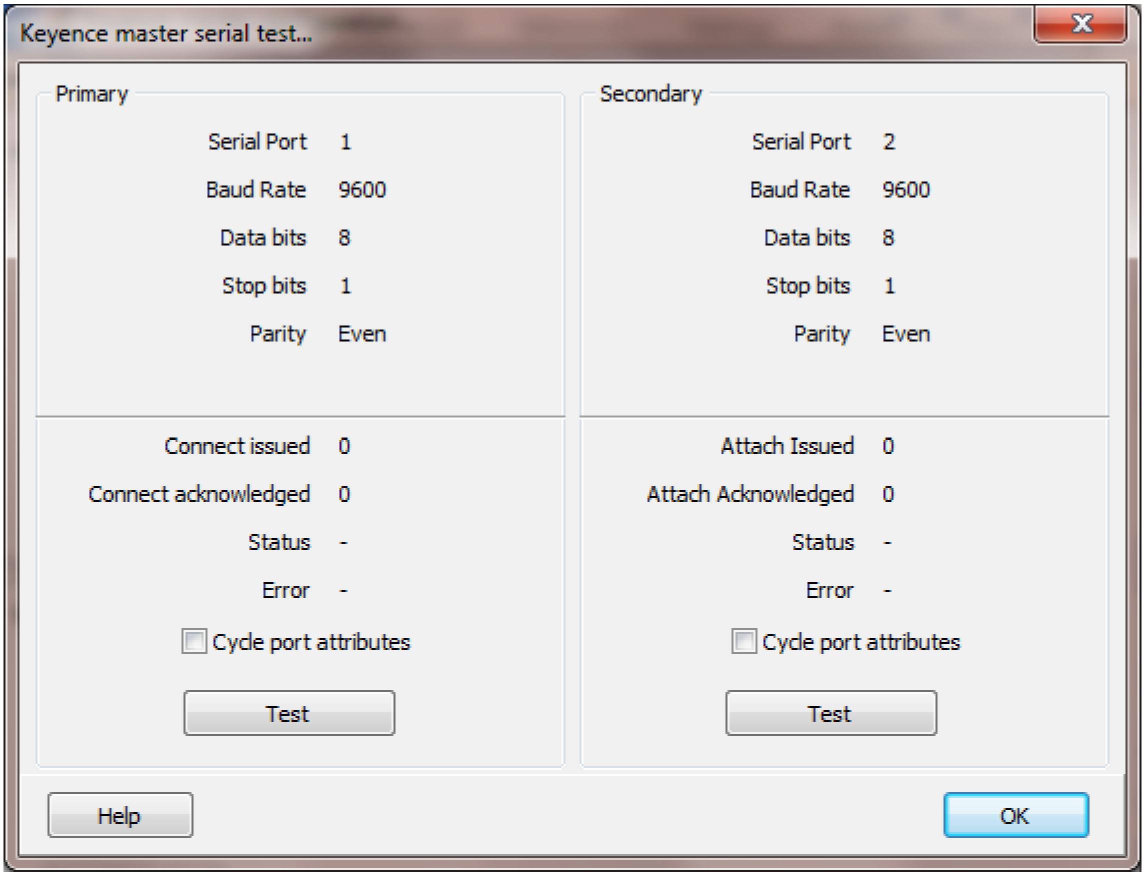
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Connection Test


Keyence master serial test...

Primary

Serial Port 1

Baud Rate 9600

Data bits 8

Stop bits 1

Parity Even

Connect issued 0

Connect acknowledged 0

Status -

Error -

☐ Cycle port attributes

Secondary

Serial Port 2

Baud Rate 9600

Data bits 8

Stop bits 1

Parity Even

Attach Issued 0

Attach Acknowledged 0

Status -

Error -

☐ Cycle port attributes

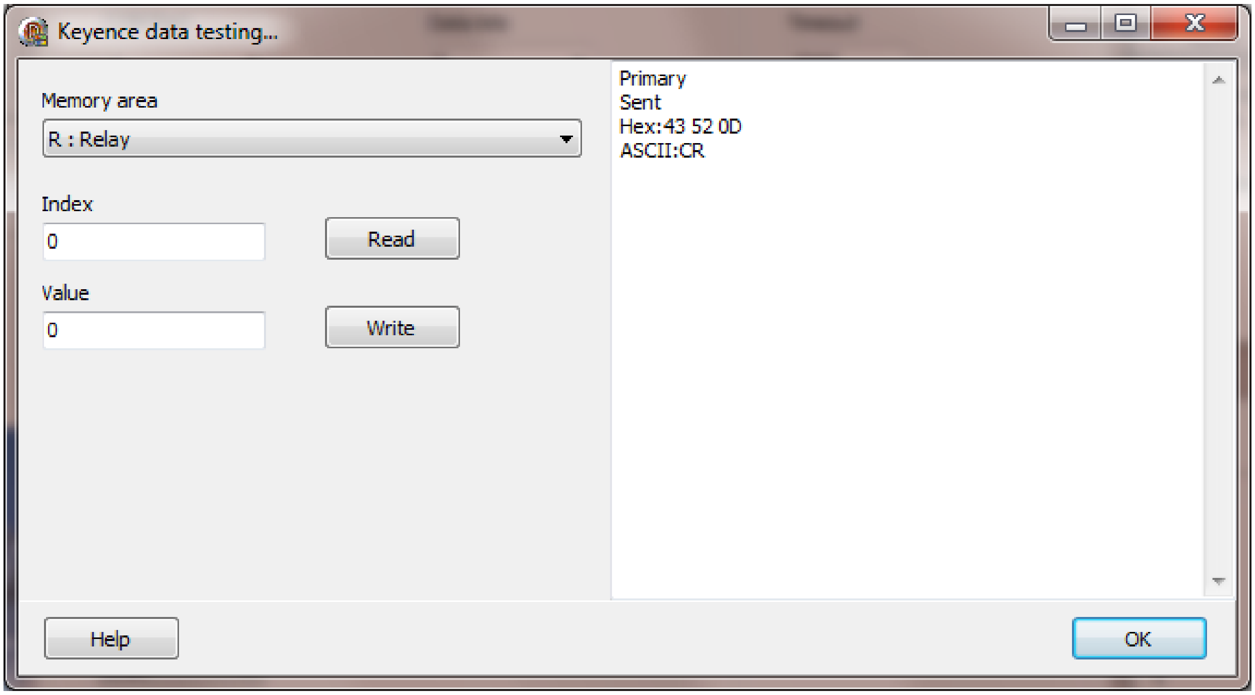
Used to verify the serial ports settings from the PC to the PLC.

When the test button is selected the program will send an "Connect" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Data Test


Keyence data testing...
Memory area
Index
Value
Read
Write
Help
OK

Memory area: R : Relay

Index: 0

Value: 0

Primary
Sent
Hex:43 52 0D
ASCII:CR

Used to verify an address exists in the PLC and can be read.

Holding down the "CTRL" key while selecting the button will command the test code to utilize the secondary port configuration attributes. Otherwise the primary port configuration attributes will be utilized.

Error messages

E0	Relay number error
E1	Command error
E2	Program unregistered
E3	CPU fault
E4	Write protected
E5	CPU error

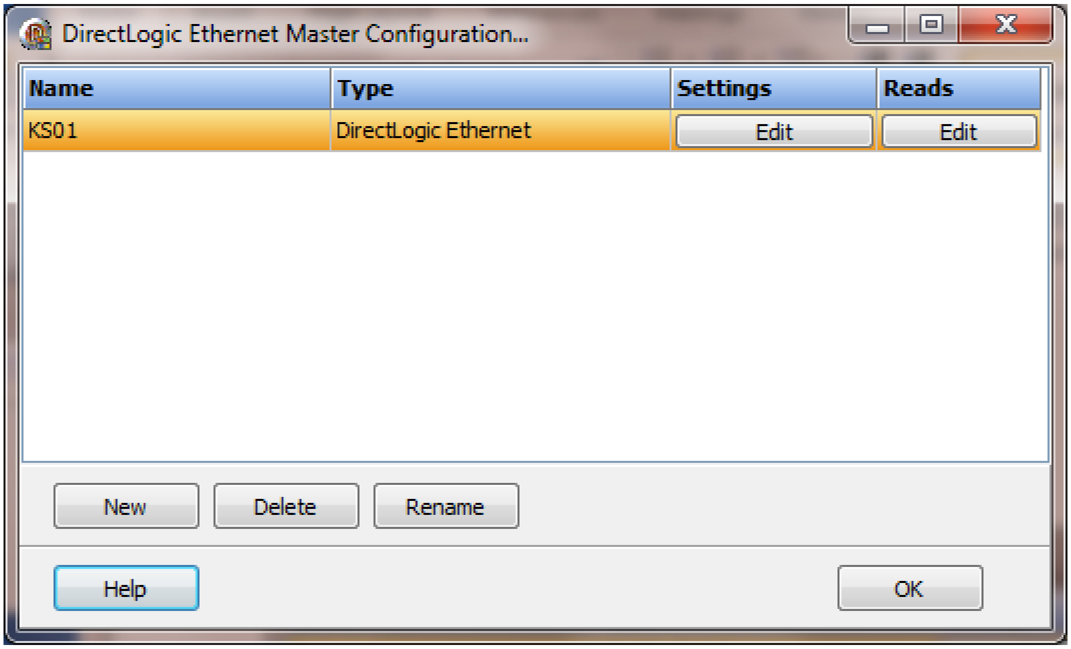
Register Types

The supported Keyence registers.

Register Type	Prefix	Data Type
Analog Trimmer	AT	Word
Counter Contact	C	Bit
Counter Current Value	CC	Word
Counter Preset Value	CP	Word
High Speed Counter Comparator Contact	CTC	Bit
High Speed Counter Contact	CTH	Bit
High Speed Counter Comparator Current Value	CTCC	Word
High Speed Counter Comparator Preset Value	CTCP	Word
High Speed Counter Current Value	CTHC	Word
High Speed Counter Preset Value	CTHP	Word
Data Memory	DM	Word
Relay	R	Bit
Timer Contact	T	Bit
Timer Current Value	TC	Word
Temporary Data Memory	TM	Word
Timer Preset Value	TP	Word

K-SEQUENCE (DIRECTLOGIC) ETHERNET

Each DirectLogic (DL) master object is listed in the window.



DirectLogic Ethernet Master Configuration...
New
Delete
Rename
Help
OK

Name	Type	Settings	Reads
KS01	DirectLogic Ethernet	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible DL master objects is limited by the license purchased.

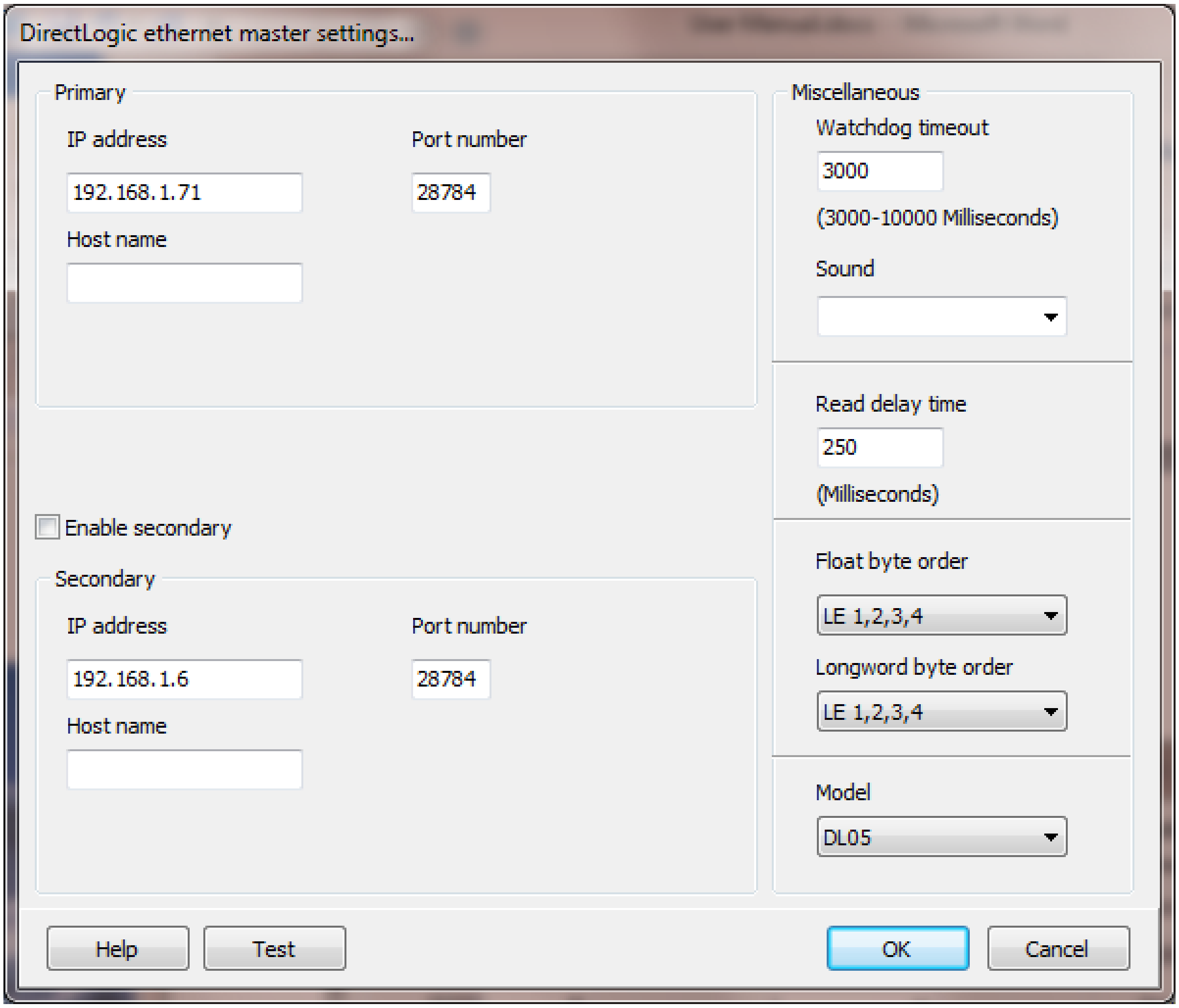
To rename an object select the "Rename" button and supply a new name.

To delete a DL master object select the "Delete" button.

AD Commands (UDP)

Name	Code
Read	1Eh
Write	20h

Settings



Primary
IP address: 192.168.1.71
Port number: 28784
Host name:

Miscellaneous
Watchdog timeout: 3000
(3000-10000 Milliseconds)
Sound:
Read delay time: 250
(Milliseconds)
Float byte order: LE 1,2,3,4
Longword byte order: LE 1,2,3,4
Model: DL05

☐ Enable secondary

Secondary
IP address: 192.168.1.6
Port number: 28784
Host name:

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Note: During testing, using a DL06, we discovered the PLC would sometimes not respond. The PLC supports UDP, a connectionless protocol. Three watchdog timeouts must occur before an error is indicated.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

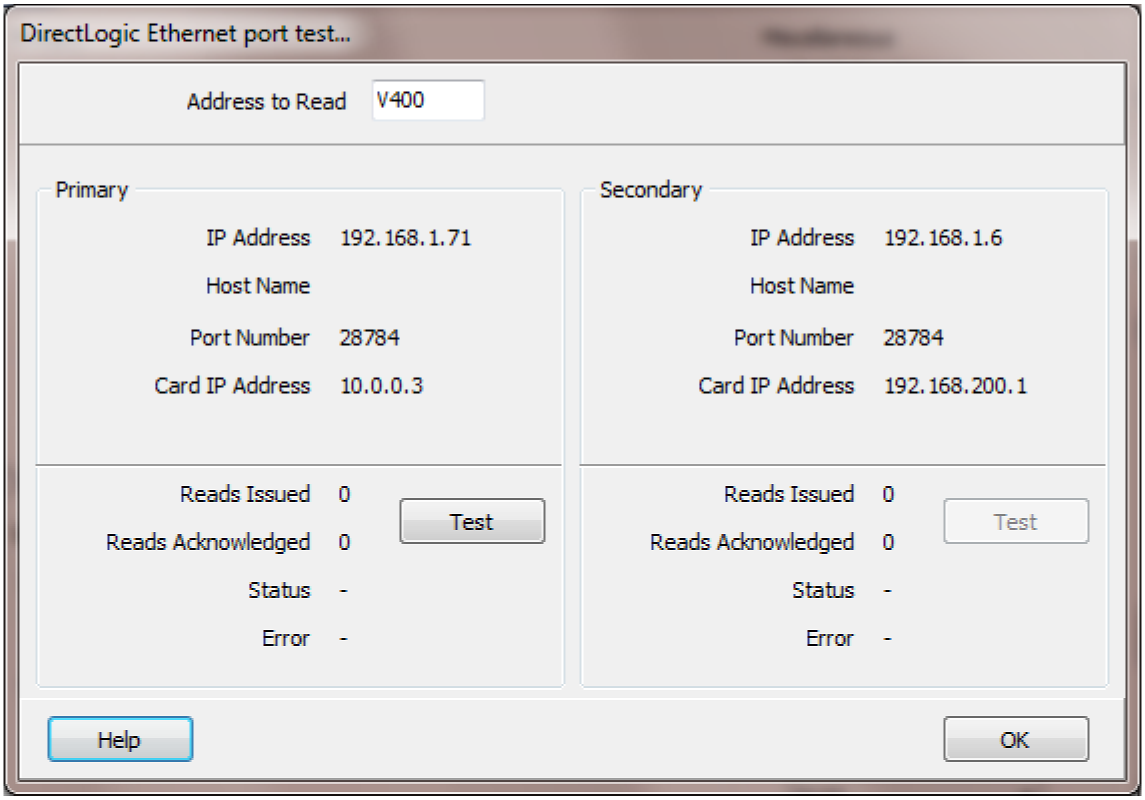
The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Model

We tested with a DL05, DL06 and a DL205 (CPU DL240). While both PLCs (05/06) use K-Sequence as a protocol they each had slight variations from the specifications. For the DL205 select the DL05 model. If you are using another model and you are not able to communicate using either selection please contact HMI technical support.

Test button



Address to Read V400

Primary

IP Address 192.168.1.71

Host Name

Port Number 28784

Card IP Address 10.0.0.3

Reads Issued 0

Reads Acknowledged 0

Status -

Error -

Secondary

IP Address 192.168.1.6

Host Name

Port Number 28784

Card IP Address 192.168.200.1

Reads Issued 0

Reads Acknowledged 0

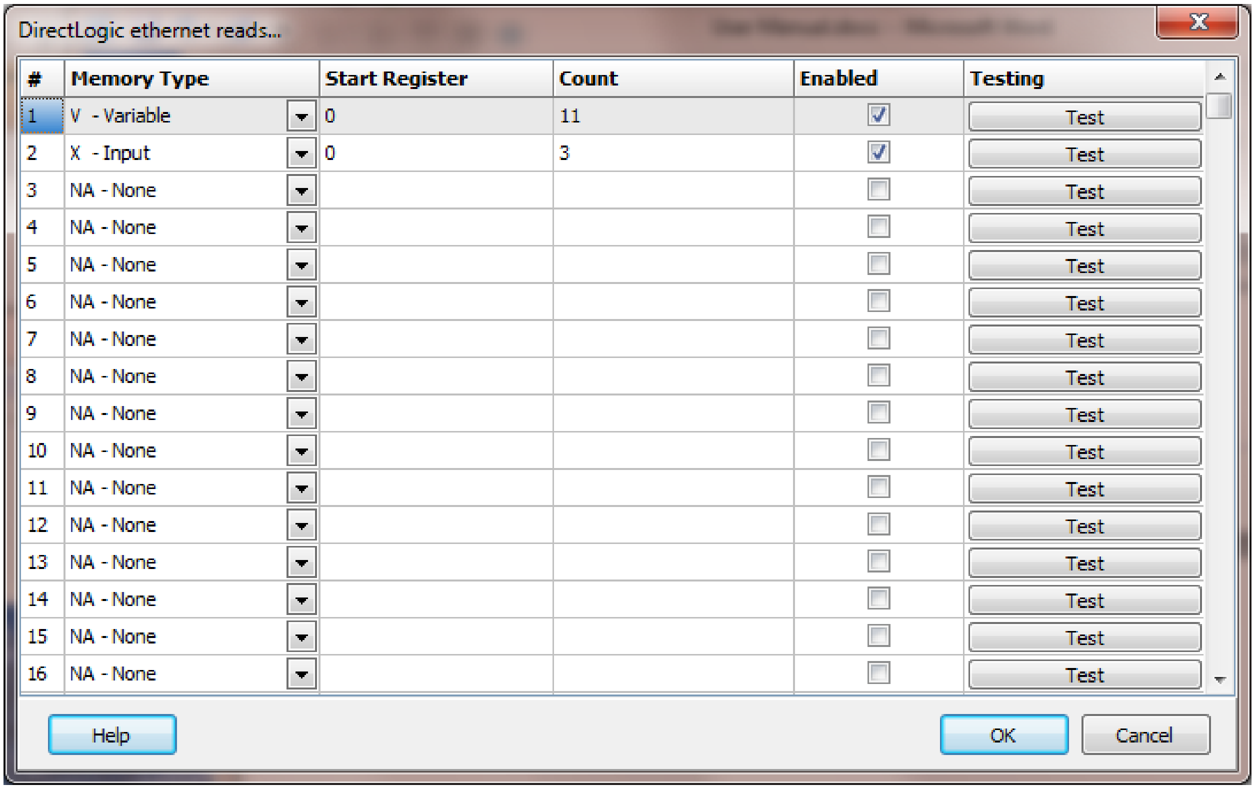
Status -

Error -

When the test button is selected the program will attempt to read one word of data from the address in the edit field.

The program will attempt to use the communication parameters configured.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	V - Variable	0	11	☑	Test
2	X - Input	0	3	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in octal

Example address:

V1, TA75, CA43, SW3
V34/6, GX73, X6, Y22

Notes:
1. Do not use leading zeros in the address string.
2. Serial, when modifying a bit in a non-bit register, all other bits in the register are cleared.
3. Ethernet, when modifying a bit a register, all other bits in the register are cleared.

Register Type

The supported DirectLogic registers.

Register Type	Prefix	Ref Num (octal)	Data Type
Variable	V	0	Word
Timer Accumulator	TA	0	Word
Counter Accumulator	CA	1000	Word
System Status	SW	7600	Word
Global Input	GX	40000	Boolean
Global Output	GY	40200	Boolean
Input	X	40400	Boolean
Output	Y	40500	Boolean
Control Relays	C	40600	Boolean
Stage Status	S	41000	Boolean
Timer Status	T	41100	Boolean
Counter Status	CT	41140	Boolean
System Status	SB	41200	Boolean

If the starting code of the register area is not correct for the slave device or, the register type is not shown, use the "Variable" memory read. This is an "untyped" read.

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values. Enter the starting register value, in octal.

The start register for the 'Boolean' data type must be on a word boundary.

Count

The number of registers to read for the request in decimal. The memory type and slave device determine the maximum number of registers that can be read.

The protocol has a maximum of 128 words of data.

All counts are the number of words to read. For bit data each count value returns 16 bits starting at "start register". For word data, each count value returns 1 word.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

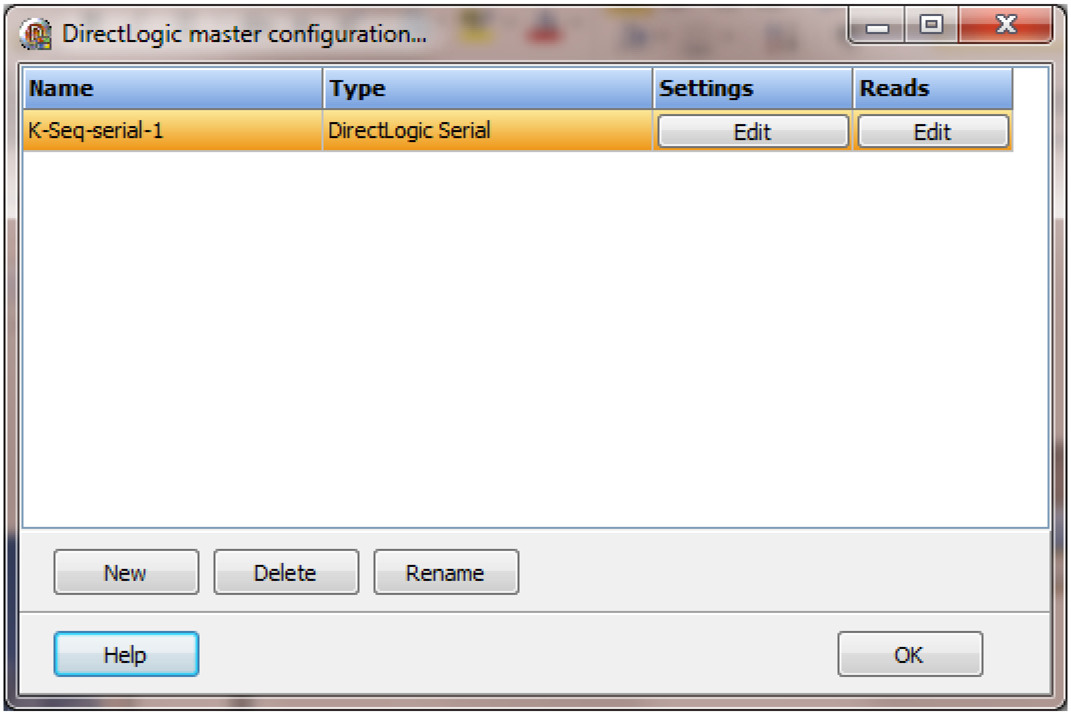
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Start register is not octal	All register references are in octal.

K-SEQUENCE (DIRECTLOGIC) SERIAL

Each DirectLogic (DL) master object is listed in the window.



Name	Type	Settings	Reads
K-Seq-serial-1	DirectLogic Serial	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible DL master objects is limited by the license purchased.

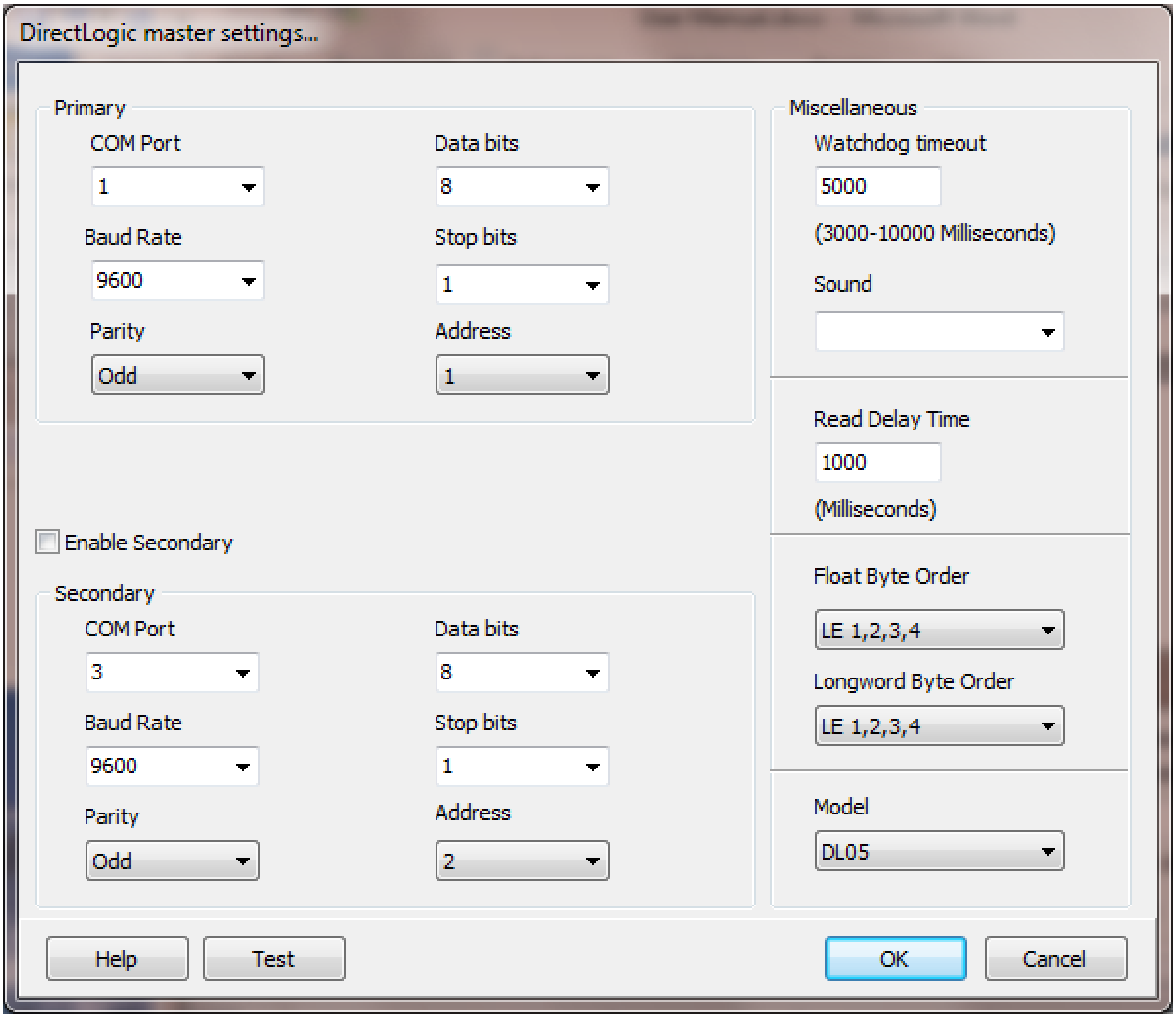
To rename an object select the "Rename" button and supply a new name.

To delete a DL master object select the "Delete" button.

AD Commands (serial)

Name	Task Code
Monitor Data	40h
Write Data to Register Memory	46h
Force On	44h
Force Off	45h

Settings


DirectLogic master settings...

Primary

COM Port: 1

Data bits: 8

Baud Rate: 9600

Stop bits: 1

Parity: Odd

Address: 1

☐ Enable Secondary

Secondary

COM Port: 3

Data bits: 8

Baud Rate: 9600

Stop bits: 1

Parity: Odd

Address: 2

Miscellaneous

Watchdog timeout: 5000 (3000-10000 Milliseconds)

Sound:

Read Delay Time: 1000 (Milliseconds)

Float Byte Order: LE 1,2,3,4

Longword Byte Order: LE 1,2,3,4

Model: DL05

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

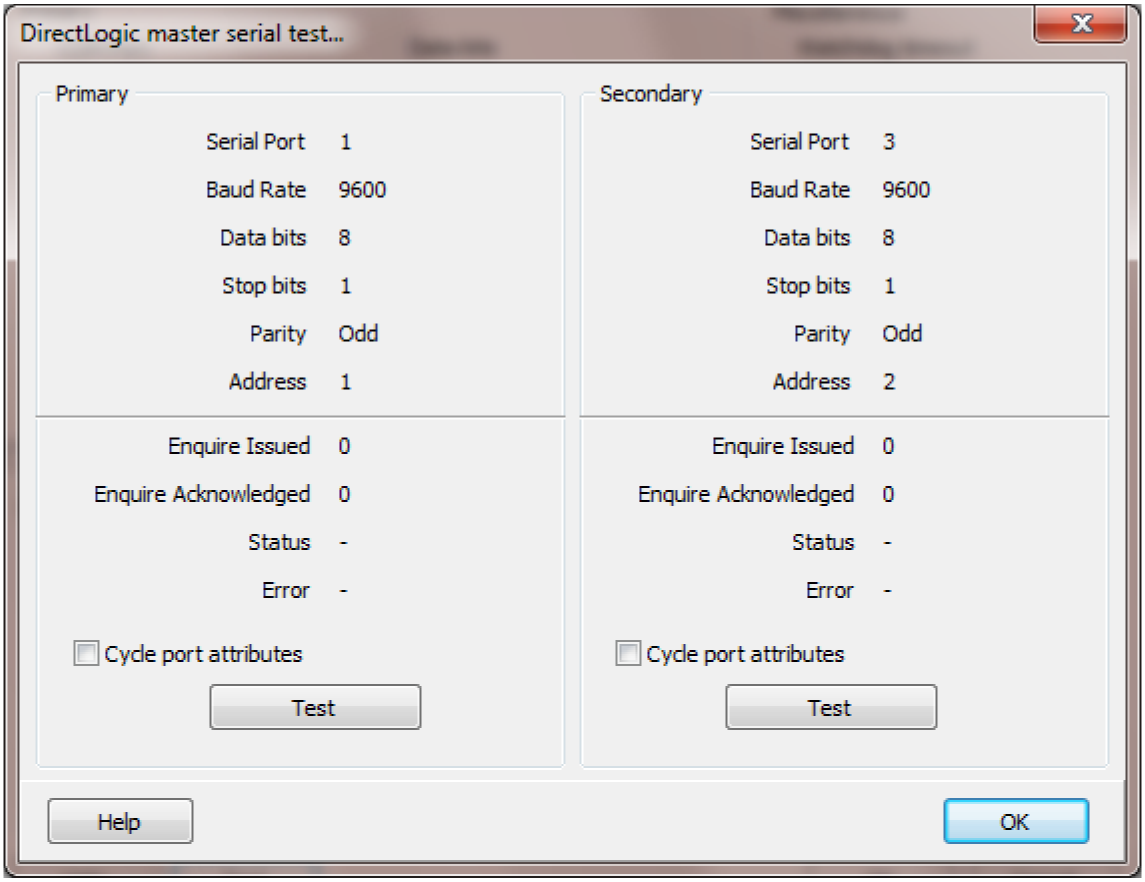
The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Model

We tested with a DL05, DL06 and a DL205 (CPU DL240). While both PLCs (05/06) use K-Sequence as a protocol they each had slight variations from the specifications. For the DL205 select the DL05 model. If you are using another model and you are not able to communicate using either selection please contact HMI technical support.

Test button



DirectLogic master serial test...

Primary

Serial Port 1
Baud Rate 9600
Data bits 8
Stop bits 1
Parity Odd
Address 1

Enquire Issued 0
Enquire Acknowledged 0
Status -
Error -

Secondary

Serial Port 3
Baud Rate 9600
Data bits 8
Stop bits 1
Parity Odd
Address 2

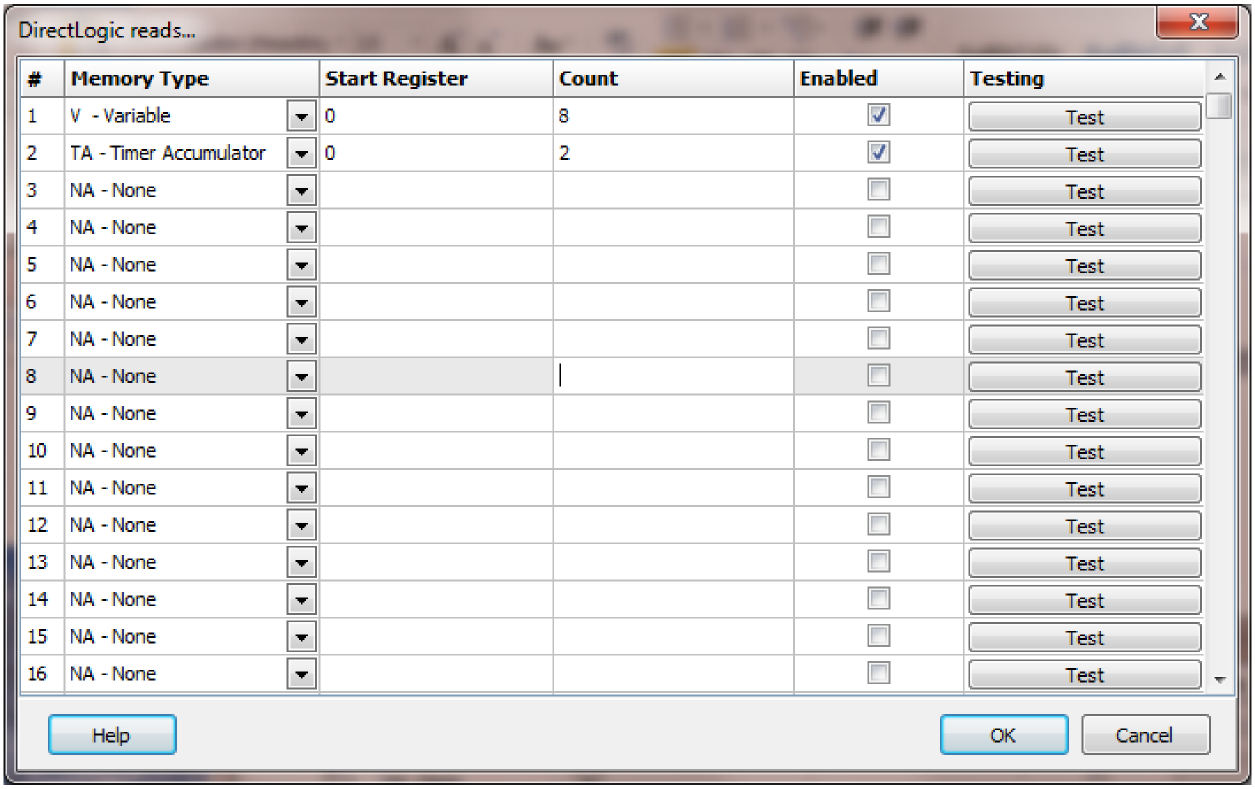
Enquire Issued 0
Enquire Acknowledged 0
Status -
Error -

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	V - Variable	0	8	☑	Test
2	TA - Timer Accumulator	0	2	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in octal

Example address:

V1, TA75, CA43, SW3
V34/6, GX73, X6, Y22

Notes:
1. Do not use leading zeros in the address string.
2. Serial, when modifying a bit in a non-bit register, all other bits in the register are cleared.
3. Ethernet, when modifying a bit a register, all other bits in the register are cleared.

Register Type

The supported DirectLogic registers.

Register Type	Prefix	Ref Num (octal)	Data Type
Variable	V	0	Word
Timer Accumulator	TA	0	Word
Counter Accumulator	CA	1000	Word
System Status	SW	7600	Word
Global Input	GX	40000	Boolean
Global Output	GY	40200	Boolean
Input	X	40400	Boolean
Output	Y	40500	Boolean
Control Relays	C	40600	Boolean
Stage Status	S	41000	Boolean
Timer Status	T	41100	Boolean
Counter Status	CT	41140	Boolean
System Status	SB	41200	Boolean

If the starting code of the register area is not correct for the slave device or, the register type is not shown, use the "Variable" memory read. This is an "untyped" read.

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values. Enter the starting register value, in octal.

The start register for the 'Boolean' data type must be on a word boundary.

Count

The number of registers to read for the request in decimal. The memory type and slave device determine the maximum number of registers that can be read.

The protocol has a maximum of 128 words of data.

All counts are the number of words to read. For bit data each count value returns 16 bits starting at "start register". For word data, each count value returns 1 word.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

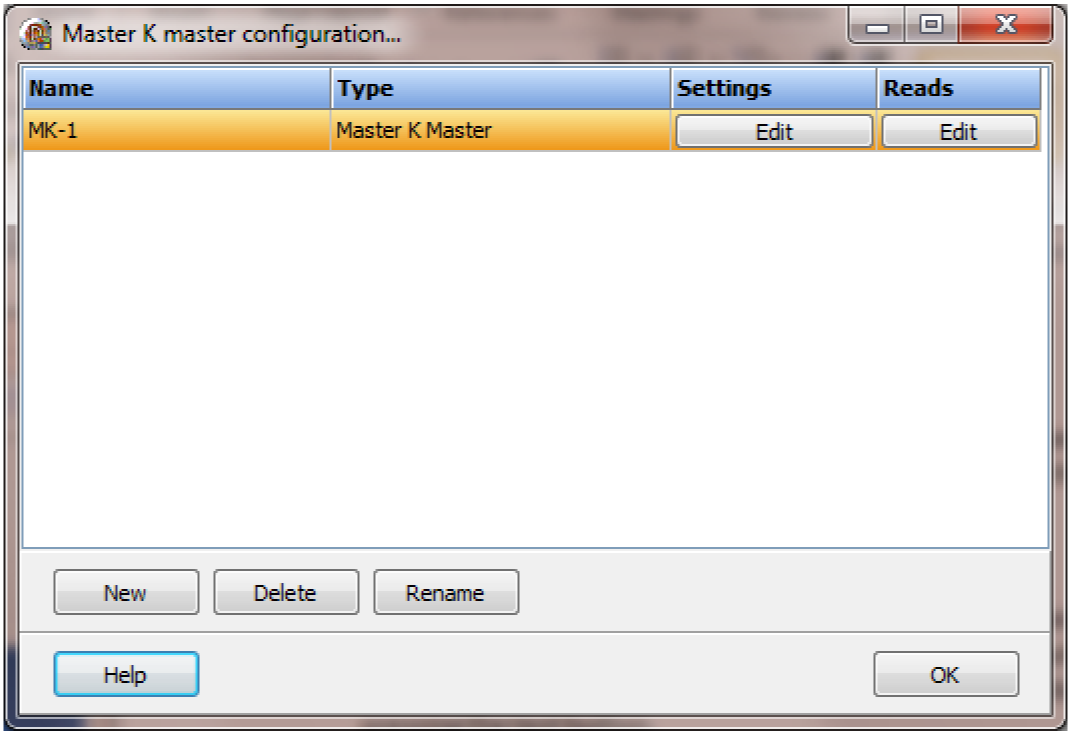
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Start register is not octal	All register references are in octal.

MASTER-K

Each Master-K master object is listed in the window.


Master K master configuration...

Name	Type	Settings	Reads
MK-1	Master K Master	Edit	Edit

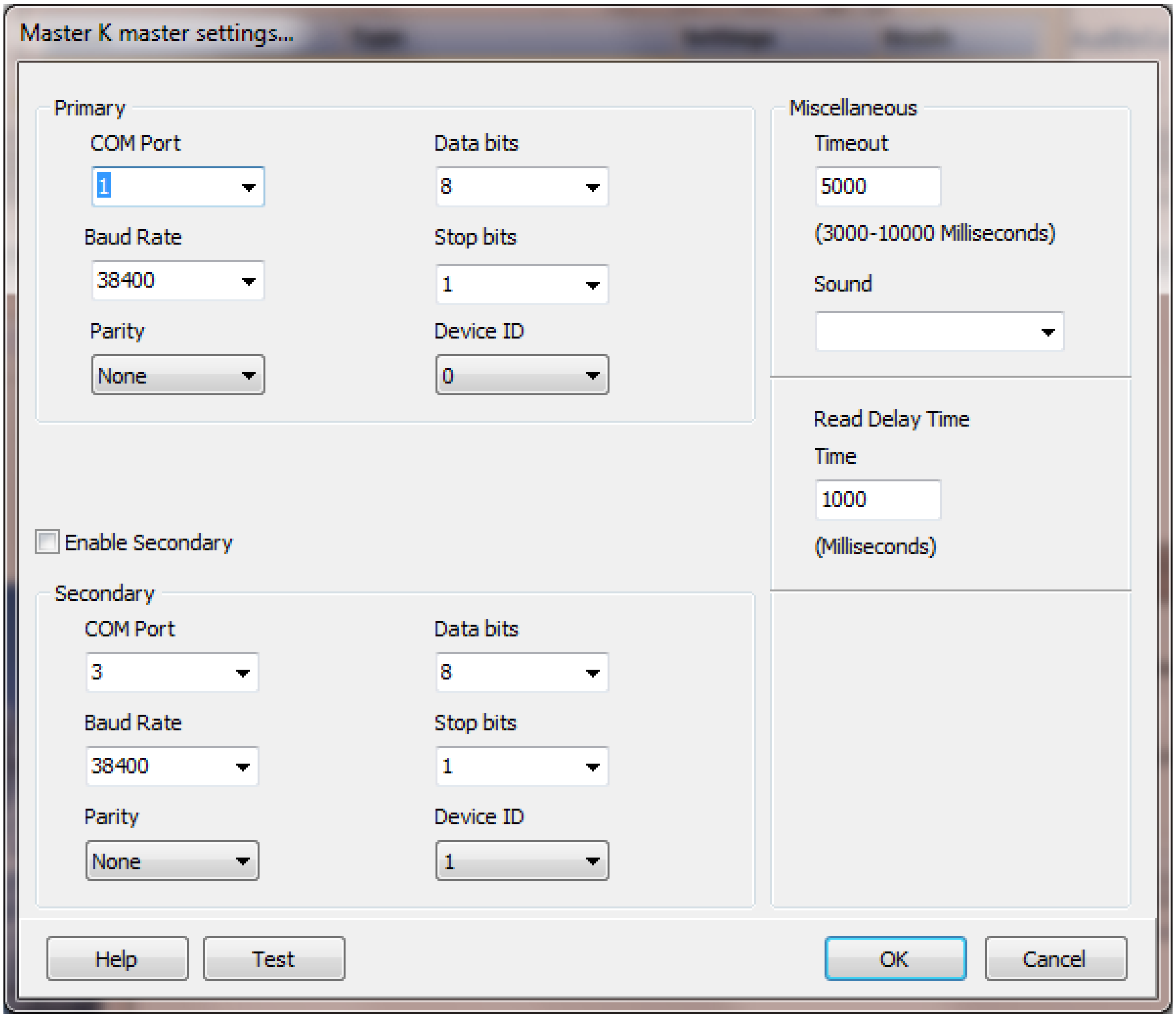
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Master-K master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Master-K master object select the "Delete" button.

Settings



Master K master settings...

Primary
COM Port: 1
Data bits: 8
Baud Rate: 38400
Stop bits: 1
Parity: None
Device ID: 0

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time
Time: 1000
(Milliseconds)

☐ Enable Secondary

Secondary
COM Port: 3
Data bits: 8
Baud Rate: 38400
Stop bits: 1
Parity: None
Device ID: 1

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Device ID

The ID of the slave device. (0-31)

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

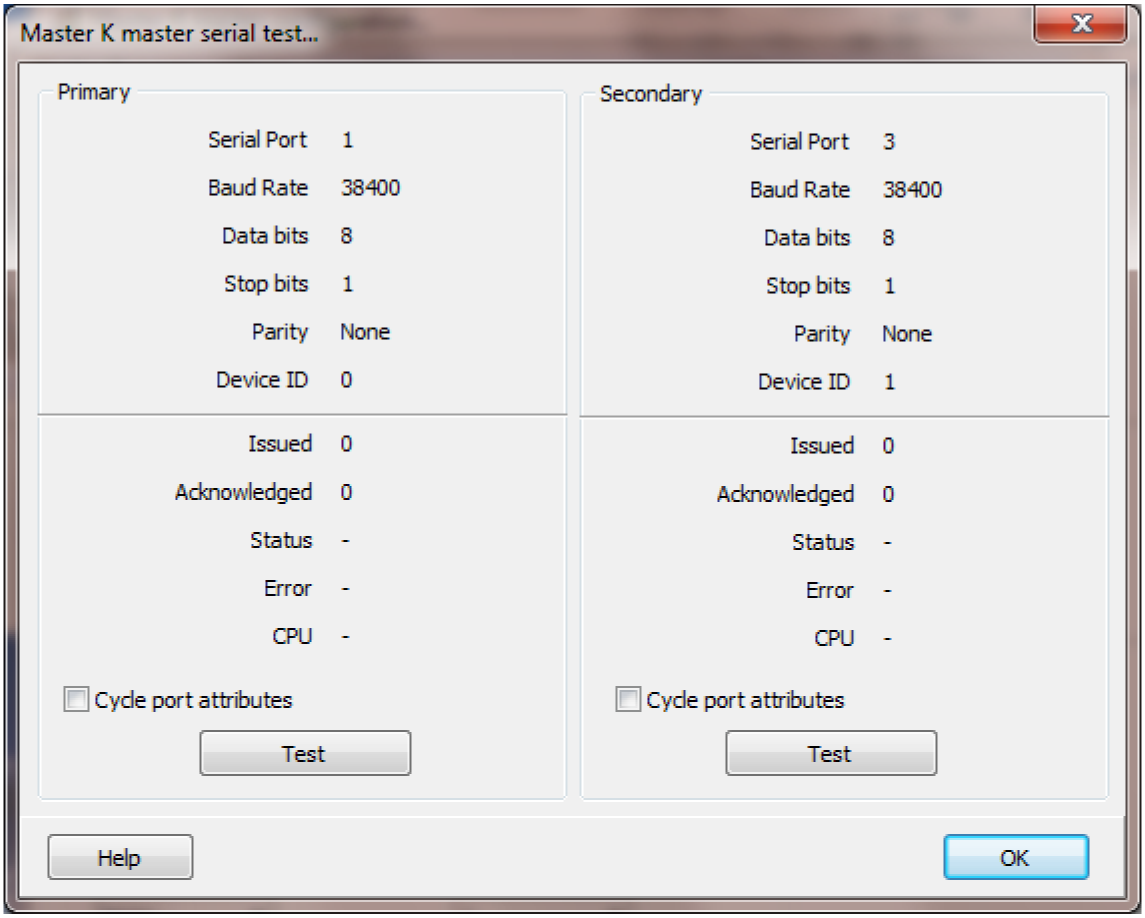
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button


Master K master serial test...

Primary

Serial Port 1
Baud Rate 38400
Data bits 8
Stop bits 1
Parity None
Device ID 0

Issued 0
Acknowledged 0
Status -
Error -
CPU -

☐ Cycle port attributes

Secondary

Serial Port 3
Baud Rate 38400
Data bits 8
Stop bits 1
Parity None
Device ID 1

Issued 0
Acknowledged 0
Status -
Error -
CPU -

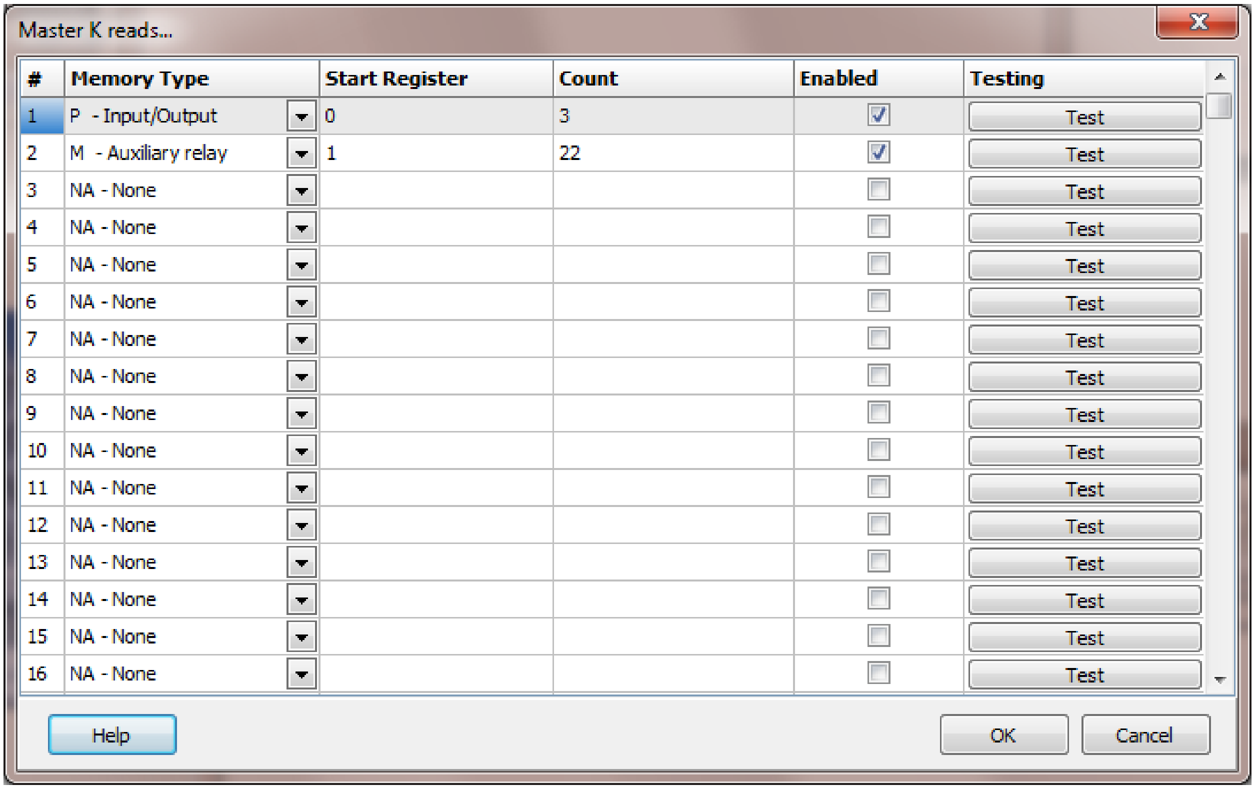
☐ Cycle port attributes

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



Master K reads...

#	Memory Type	Start Register	Count	Enabled	Testing
1	P - Input/Output	0	3	☑	Test
2	M - Auxiliary relay	1	22	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the Master-K register device characters. Exception: The '%', 'X', 'B' and 'W' are not used. Bits are 0-15. Bit, word, double word and float are supported.

Addresses in the logic editor are in hexadecimal. Addresses in the HMI are in decimal. For example M001A is a bit reference in the PLC. In the HMI it would be M1.10

Example address:

P0.1	Word 0 bit 1
P9.15	Word 9 bit 15
TV1	Timer 1 elapsed time
T1	Timer 1 complete bit
M9	Memory register 9 (If the point is configured as a 4 byte float or integer M9 and M10 will be used)
M17.4	Word 17 bit 4

Notes: The protocol specification does not specify how floats are ordered. DO NOT use leading zeros in the address. i.e. D0024 should be D24.

Memory Type

The supported Master-K defined memory areas.

Register Type	**Prefix**
Input/Output	P
Auxiliary relay	M
Link relay	L
Keep relay	K
Counter state	C
Timer state	T
Data register	D
Step relay	S
Special relay	F
Timer value	TV
Counter value	CV

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values.

Count

The number of words to read for the request. The memory type and slave device determine the maximum number of registers that can be accessed. For all memory areas except counter and timer state the maximum is 60 register.

For timer and counter states the maximum is 1. A read of 1 will read the 16 timer/counter states. If you are reading many timer/counter it would be more efficient to move the timer state into the 'M' memory area and read the 'M' memory.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

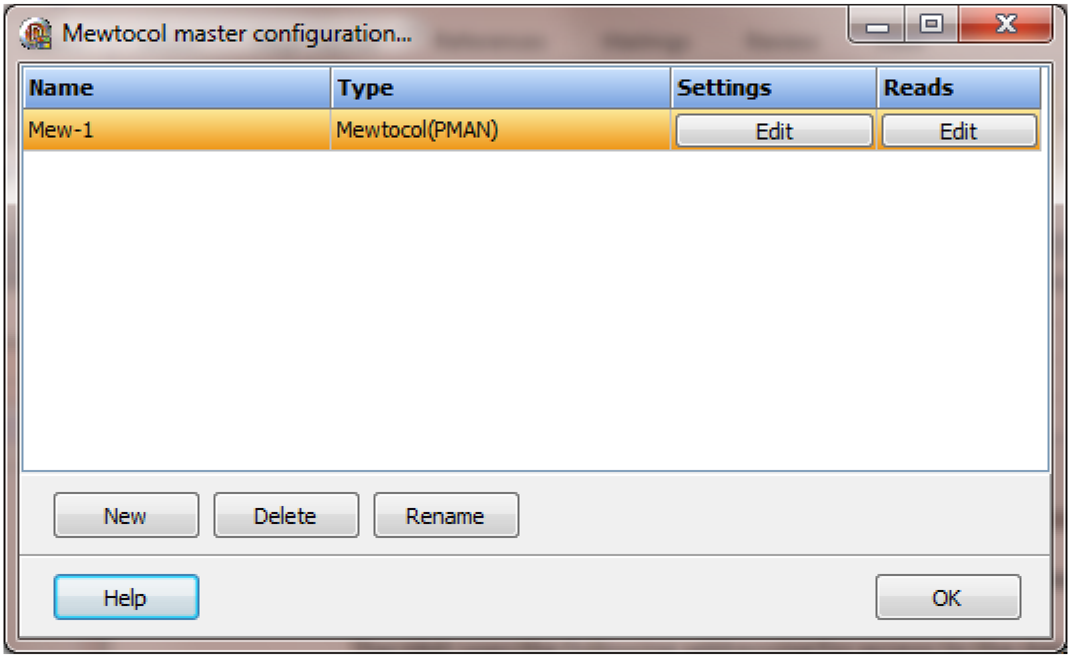
When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 1 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

MEWTOCOL (PANASONIC-MATSUSHITA-AROMAT-NAIS)

Each Mewtocol master object is listed in the window. Panasonic, Matsushita, Aromat and NAIS are some of the PLC brands using the Mewtocol protocol.



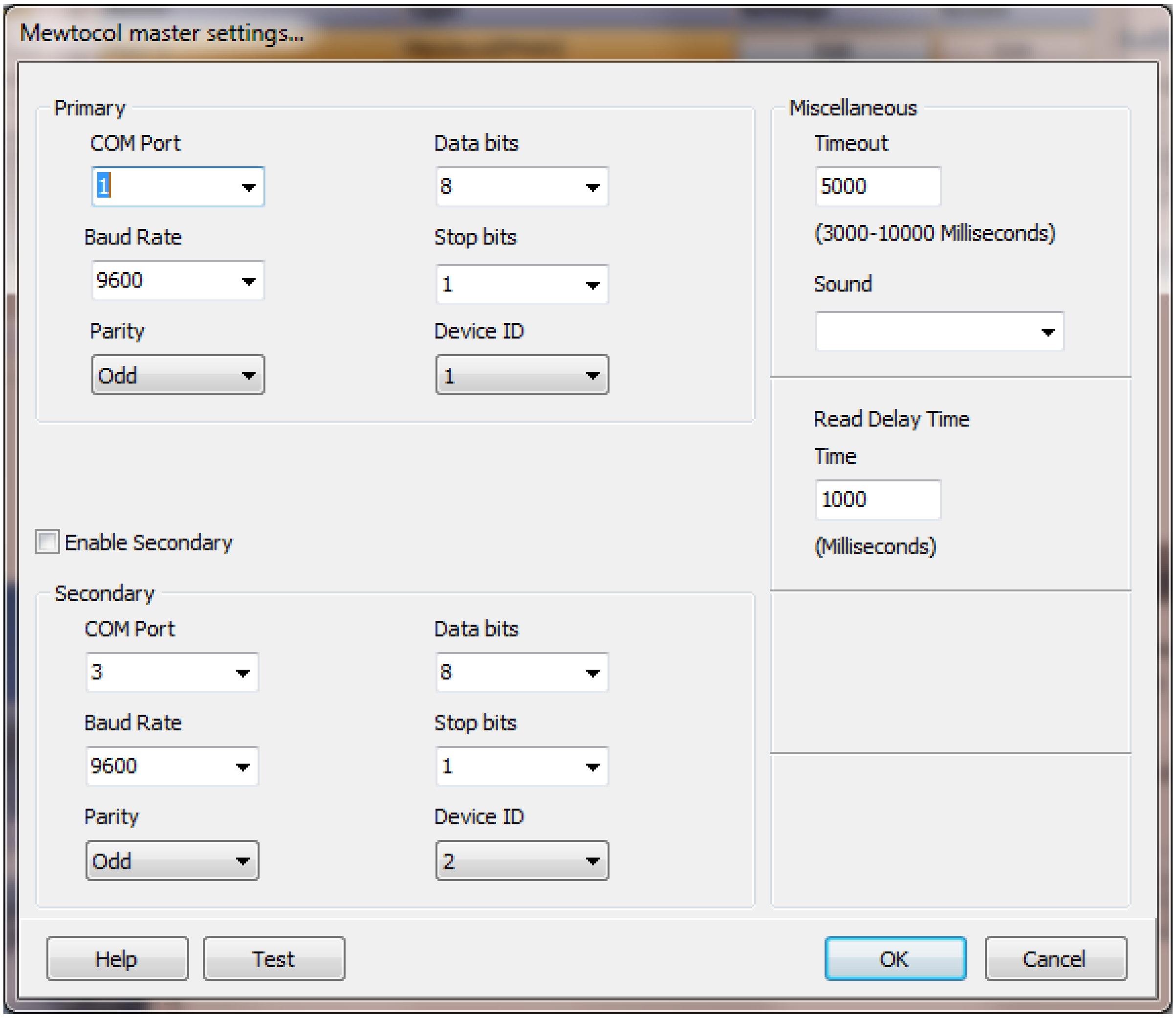
Name	Type	Settings	Reads
Mew-1	Mewtocol(PMAN)	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Mewtocol master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Mewtocol master object select the "Delete" button.

Settings


Mewtocol master settings...

Primary

COM Port: 1

Data bits: 8

Baud Rate: 9600

Stop bits: 1

Parity: Odd

Device ID: 1

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time

Time: 1000

(Milliseconds)

☐ Enable Secondary

Secondary

COM Port: 3

Data bits: 8

Baud Rate: 9600

Stop bits: 1

Parity: Odd

Device ID: 2

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Device ID

The ID of the slave device. (1-31)

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

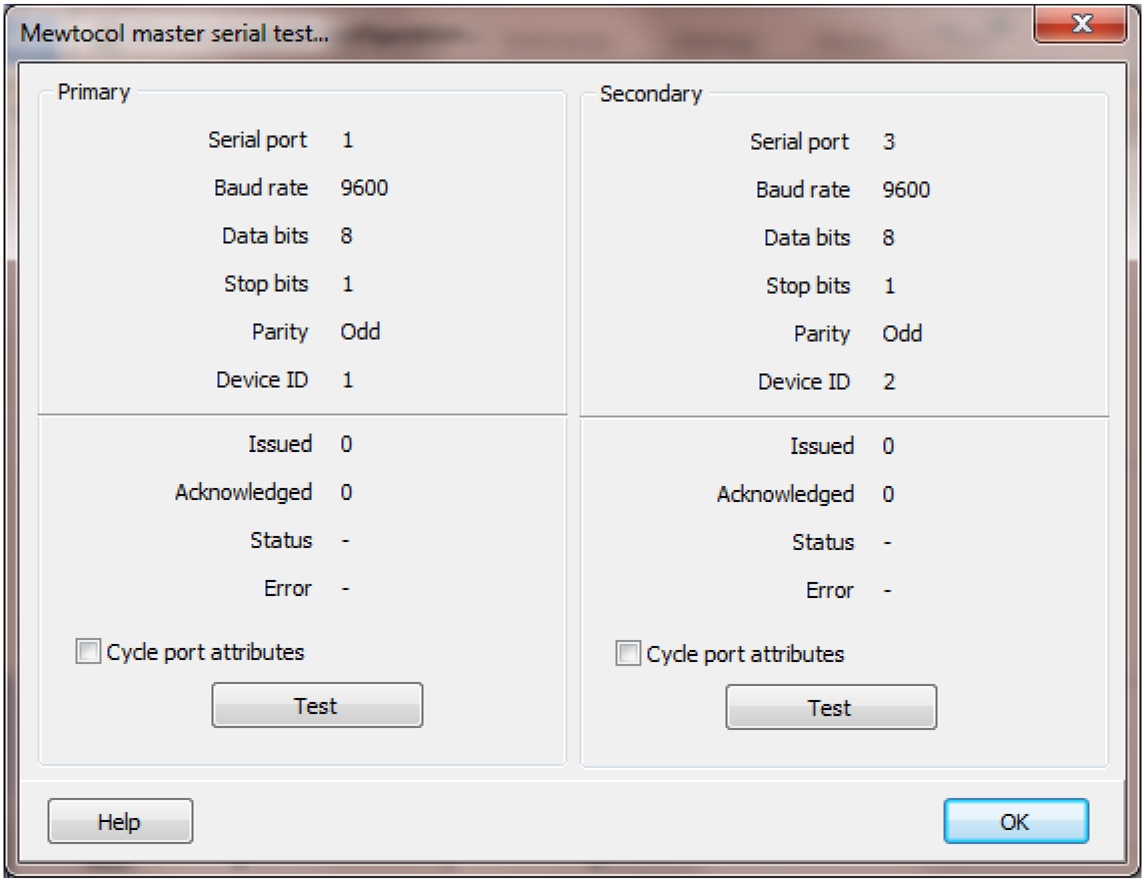
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button


Mewtocol master serial test...
☐ Cycle port attributes
Test
☐ Cycle port attributes
Test
Help
OK

Primary

Serial port 1
Baud rate 9600
Data bits 8
Stop bits 1
Parity Odd
Device ID 1

Issued 0
Acknowledged 0
Status -
Error -

Secondary

Serial port 3
Baud rate 9600
Data bits 8
Stop bits 1
Parity Odd
Device ID 2

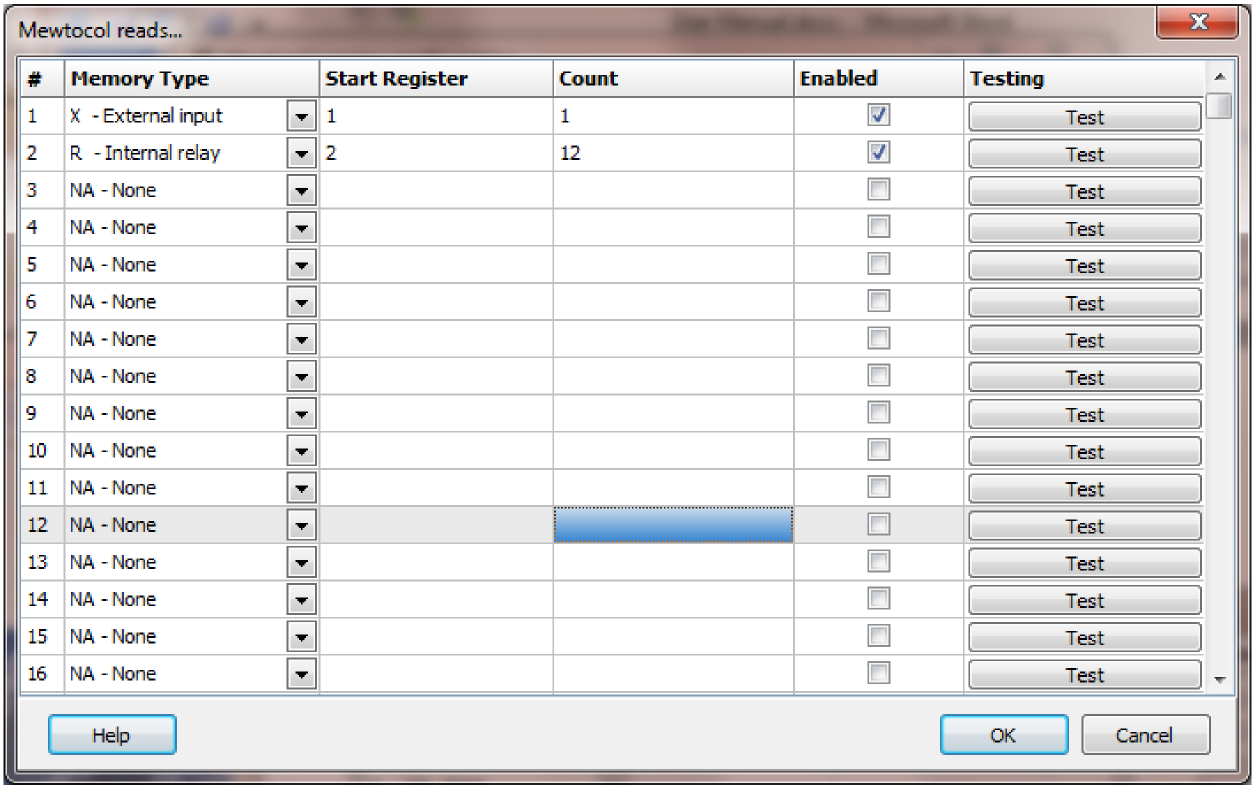
Issued 0
Acknowledged 0
Status -
Error -

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	X - External input	1	1	☑	Test
2	R - Internal relay	2	12	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in decimal

Address Examples

X0, X1F
Y0, Y4A
R0, R105, R4A
DT4, DT56

Note: For X, Y, R and L registers the Mewtocol specification states the last digit must be in hex and the leading digits up 3 places must be decimal. 1F is legal, F1 is not. In hexadecimal when 1 is added to 9F the result is A0. A0 would not be legal per the specification. After 9F in the specification is 100.

The HMI accepts all hexadecimal values for addresses. Verify the external device has the address desired.

Register Type

Register Type	Prefix	Data Type	Format
External input	X	Boolean	DDDH (Dec, Dec, Dec, Hex)
External output	Y	Boolean	DDDH
Internal relay	R	Boolean	DDDH
Link relay	L	Boolean	DDDH
Timer state	T	Boolean	Decimal
Counter state	C	Boolean	Decimal
Data Register	DT	Word, double word, float	Decimal
Link Data Register	LD	Word, double word, float	Decimal
File Register	FL	Word, double word, float	Decimal
Timer set	TS	Word	Decimal
Timer elapsed	TE	Word	Decimal
Counter set	CS	Word	Decimal
Counter elapsed	CE	Word	Decimal

Start Register

The starting register to read. This is the word address of the memory area. The value is entered in decimal. When entering point addresses the value is in hexadecimal or decimal based on the register type.

Count

The number of registers to read for the request in decimal. Each register is 16 bits. The protocol has a maximum of 27 words of data per request.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

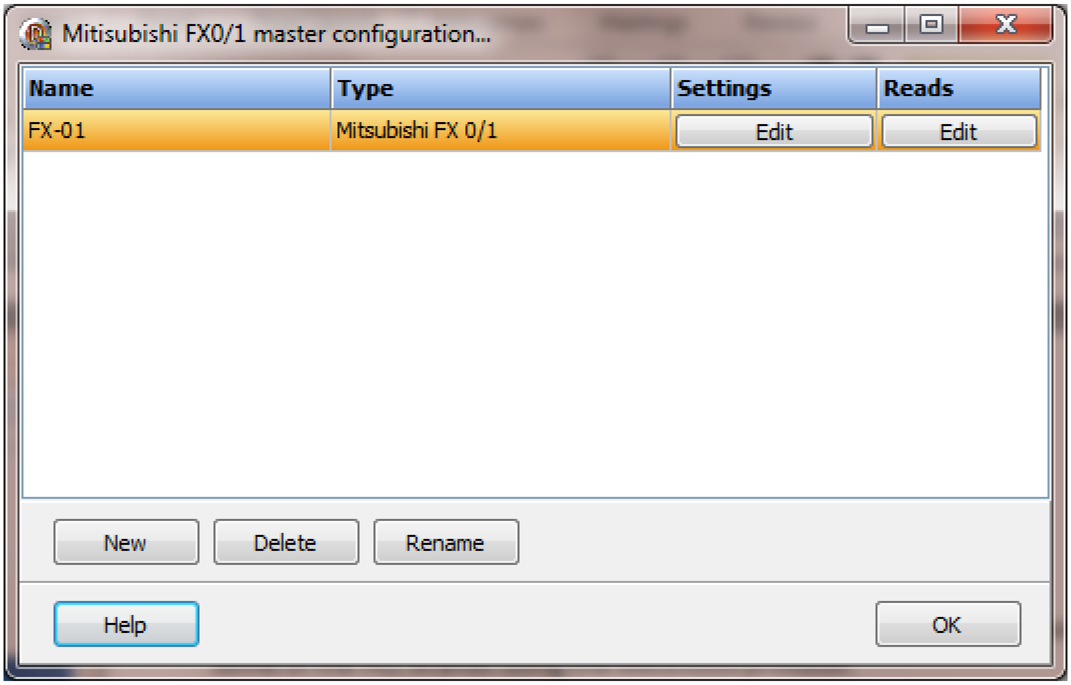
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. See 'Testing error message 'below.

Read configuration error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

MITSUBISHI FX 0/1

Each FX0/1 master object is listed in the window.



Mitisubishi FX0/1 master configuration...
New
Delete
Rename
Help
OK

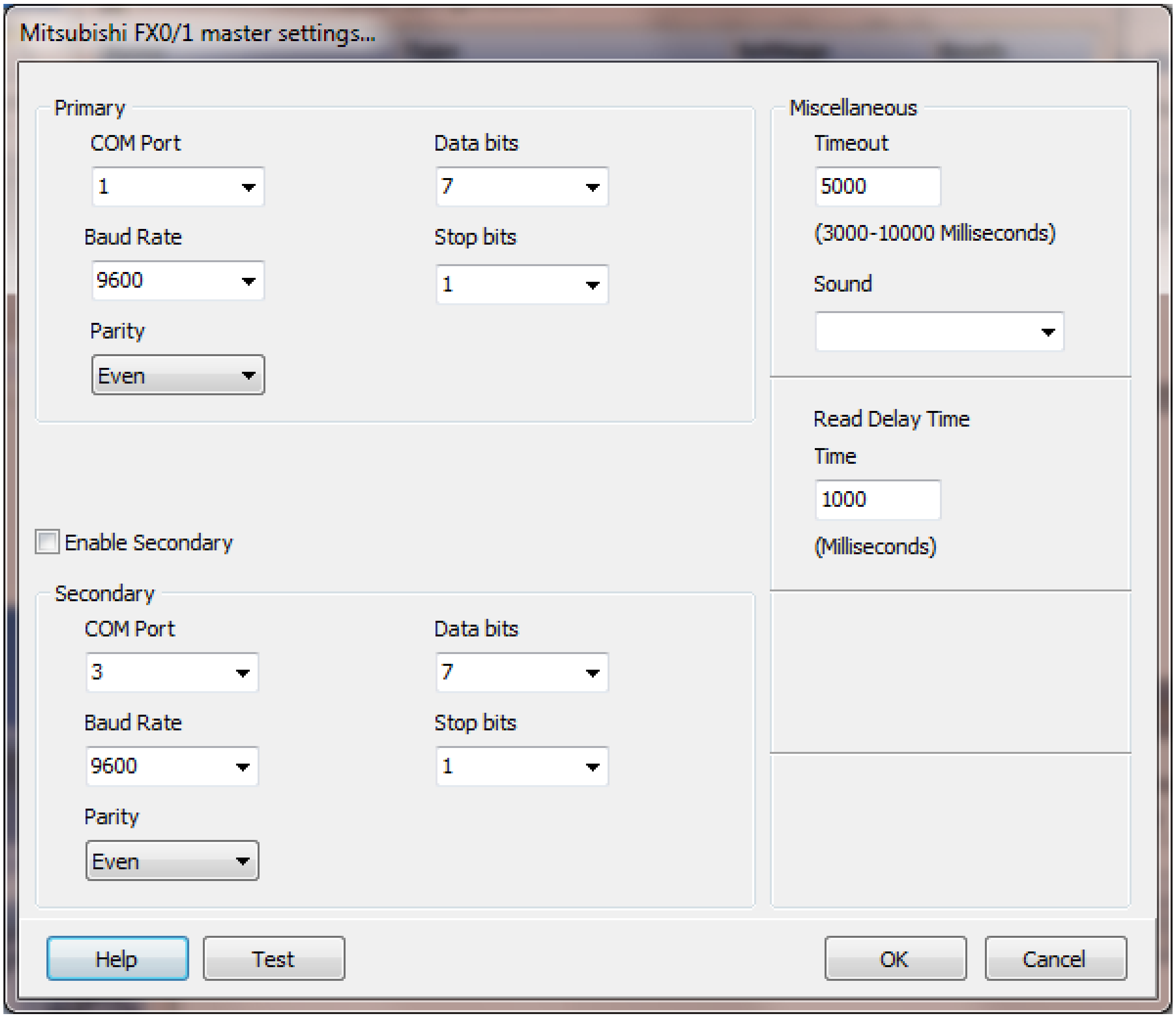
Name	Type	Settings	Reads
FX-01	Mitsubishi FX 0/1	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible FX0/1 master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a FX0/1 master object select the "Delete" button.

Settings


Mitsubishi FX0/1 master settings...

Primary
COM Port: 1
Baud Rate: 9600
Parity: Even
Data bits: 7
Stop bits: 1

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time
Time: 1000
(Milliseconds)

☐ Enable Secondary

Secondary
COM Port: 3
Baud Rate: 9600
Parity: Even
Data bits: 7
Stop bits: 1

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

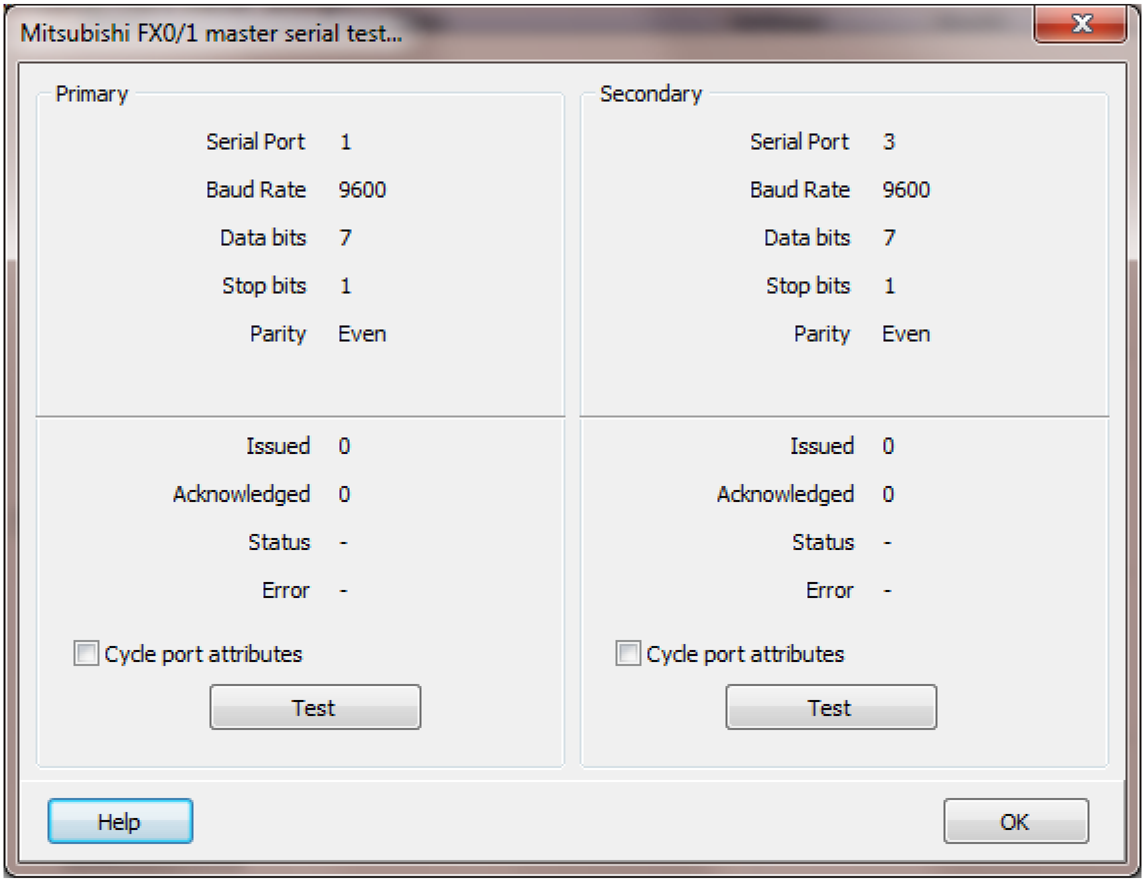
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button


Mitsubishi FX0/1 master serial test...

Primary

Serial Port 1
Baud Rate 9600
Data bits 7
Stop bits 1
Parity Even

Issued 0
Acknowledged 0
Status -
Error -

☐ Cycle port attributes

Secondary

Serial Port 3
Baud Rate 9600
Data bits 7
Stop bits 1
Parity Even

Issued 0
Acknowledged 0
Status -
Error -

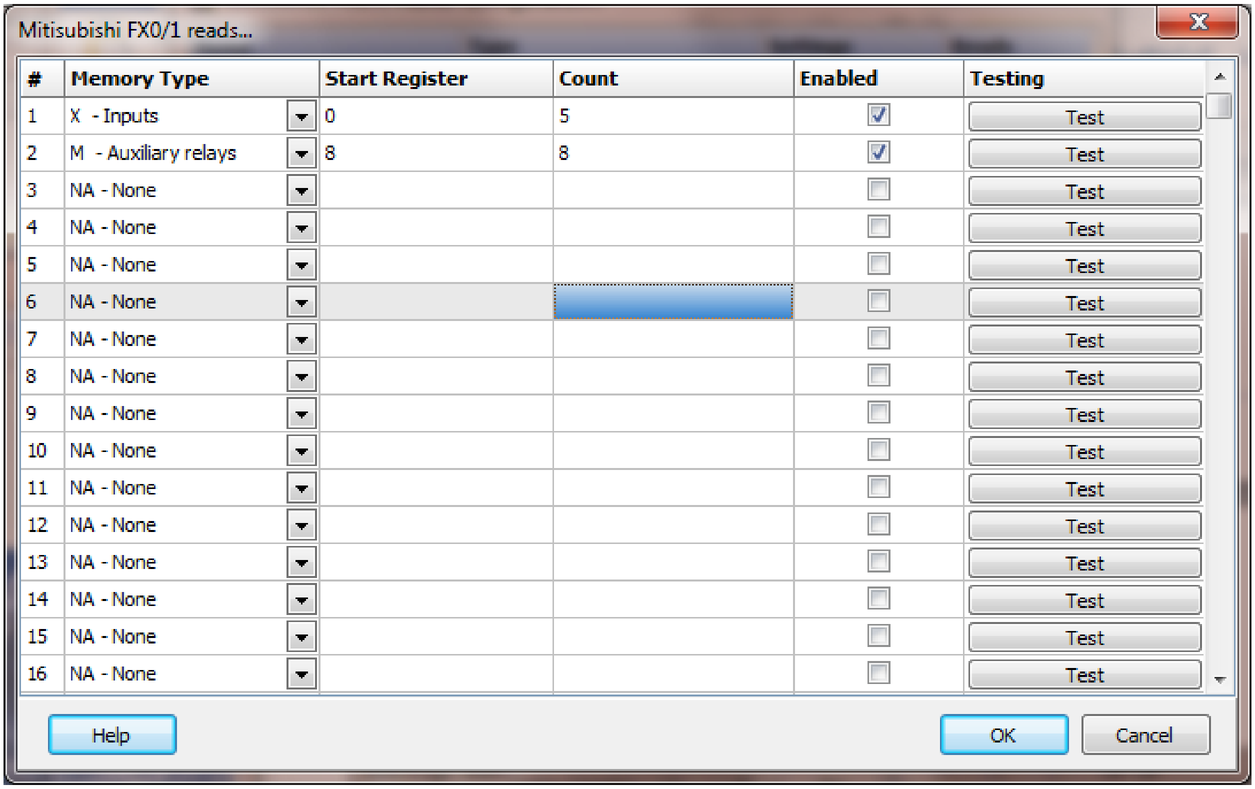
☐ Cycle port attributes

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	X - Inputs	0	5	☑	Test
2	M - Auxiliary relays	8	8	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in octal.

Address Examples

X0, X105, Y3, Y77	Inputs and outputs are in octal.
M2, M90	
MS8000, MS8255	
SR8000	default for this type is word
SR8002	point is configured for longword or float
TS3, TS89	
CS4, CS90	
TR4, TR8	
CR34, CR56	
T4, T67	word access to the timer accumulator
C56, C77	word access to the counter
CX8, CX72	longword access to the counter accumulator
S2, S90	
D1	default for this type is word
D0	point is configured for longword or float

Notes:
1. Do not use leading zeros in the address string.
2. When modifying a bit in a non-bit register, all other bits in the register are cleared.

Register Type

The supported FX0/1 registers.

Register Type	Prefix	Radix	Count	Data Type
Input	X	Octal	Byte	Bit
Output	Y	Octal	Byte	Bit
Auxiliary relays	M	Decimal	Byte	Bit
Special auxiliary relays	MS	Decimal	Byte	Bit
Special data register	SR	Decimal	Word	Word, longword, float
Timer state	TS	Decimal	Byte	Bit
Counter state	CS	Decimal	Byte	Bit
Timer reset	TR	Decimal	Byte	Bit
Counter reset	CR	Decimal	Byte	Bit
Timer	T	Decimal	Word	Word
Counter	C	Decimal	Word	Word
Counter (32 bit)	CX	Decimal	Word	Longword
States	S	Decimal	Byte	Bit
Data register	D	Decimal	Word	Word, longword, float

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values. Enter the starting register value, in octal.

1. Special auxiliary relays minimum start register is 8000.
2. Special data register minimum start register is 8000.

Count

The number of registers to read for the request in decimal. The memory type and slave device determine the maximum number of registers that can be read. The protocol has a maximum of 64 bytes of data.

1. For bit data each count value returns 8 bits starting at "start register". The bit address must be byte aligned.
2. For timers and 16 bit counters the count is the number of timers. Each timer/counter is 2 bytes
3. For 32 bit counters the count is the number of counters. Each counter is 4 bytes.
4. When reading data registers and the point data type is longword or float the count must include all bytes. (4 per value)
5. When referencing 32 bit counters apply the start address from the start address for the PLC type. (CX0 = 32 bit start counter in PLC)

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

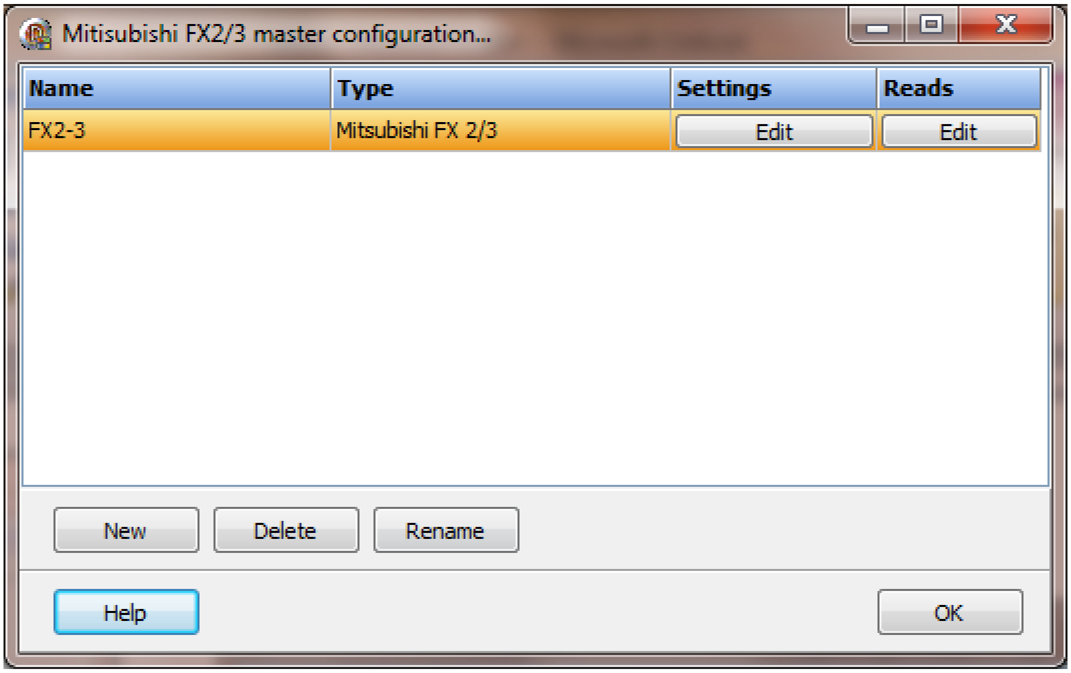
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Start register is not octal	All register references are in octal.

MITSUBISHI FX 2/3

Each FX2/3 master object is listed in the window.


Mitisubishi FX2/3 master configuration...
New
Delete
Rename
Help
OK

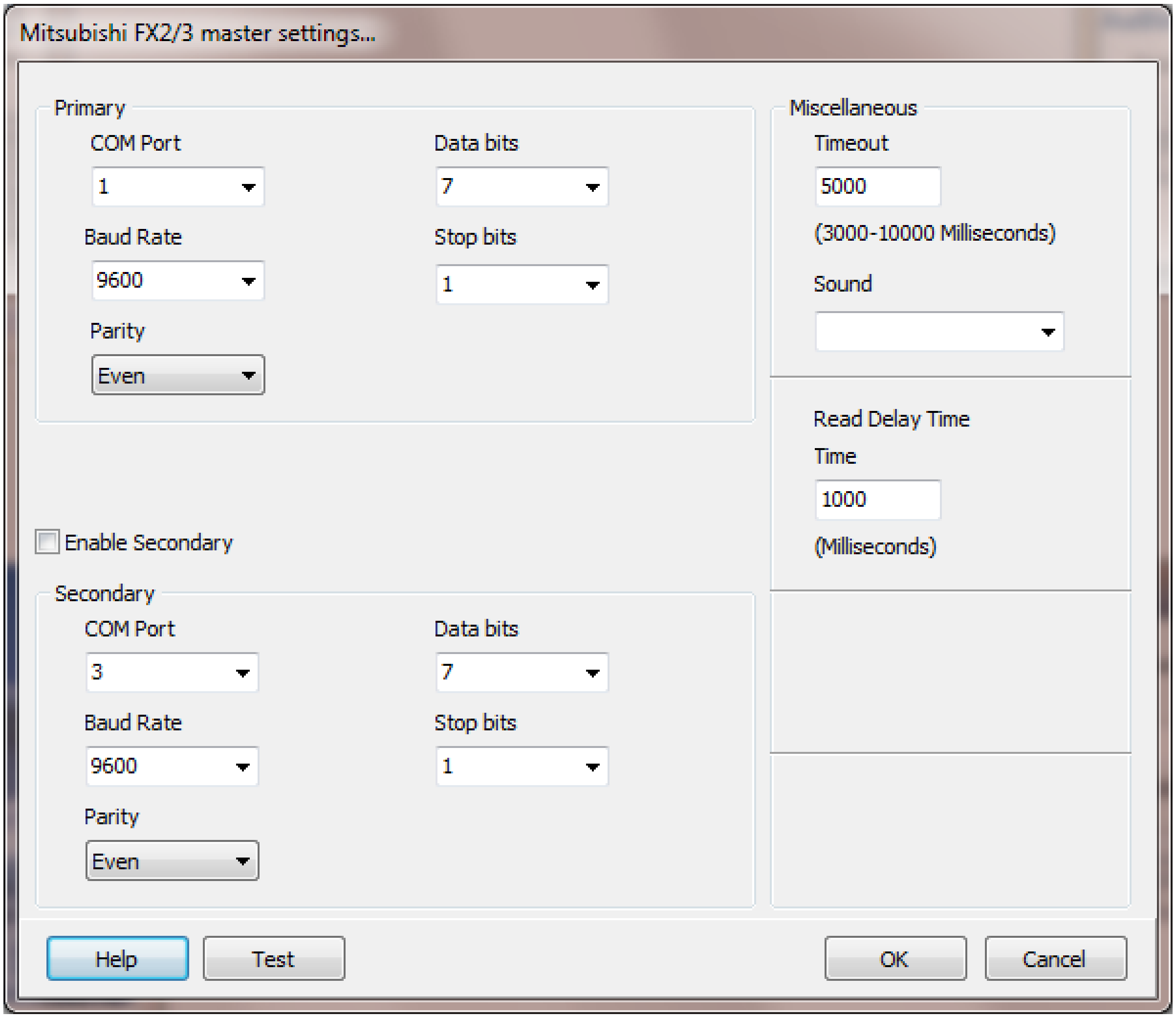
Name	Type	Settings	Reads
FX2-3	Mitsubishi FX 2/3	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible FX2/3 master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a FX2/3 master object select the "Delete" button.

Settings


Mitsubishi FX2/3 master settings...

Primary
COM Port: 1
Data bits: 7
Baud Rate: 9600
Stop bits: 1
Parity: Even

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time
Time: 1000
(Milliseconds)

☐ Enable Secondary

Secondary
COM Port: 3
Data bits: 7
Baud Rate: 9600
Stop bits: 1
Parity: Even

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

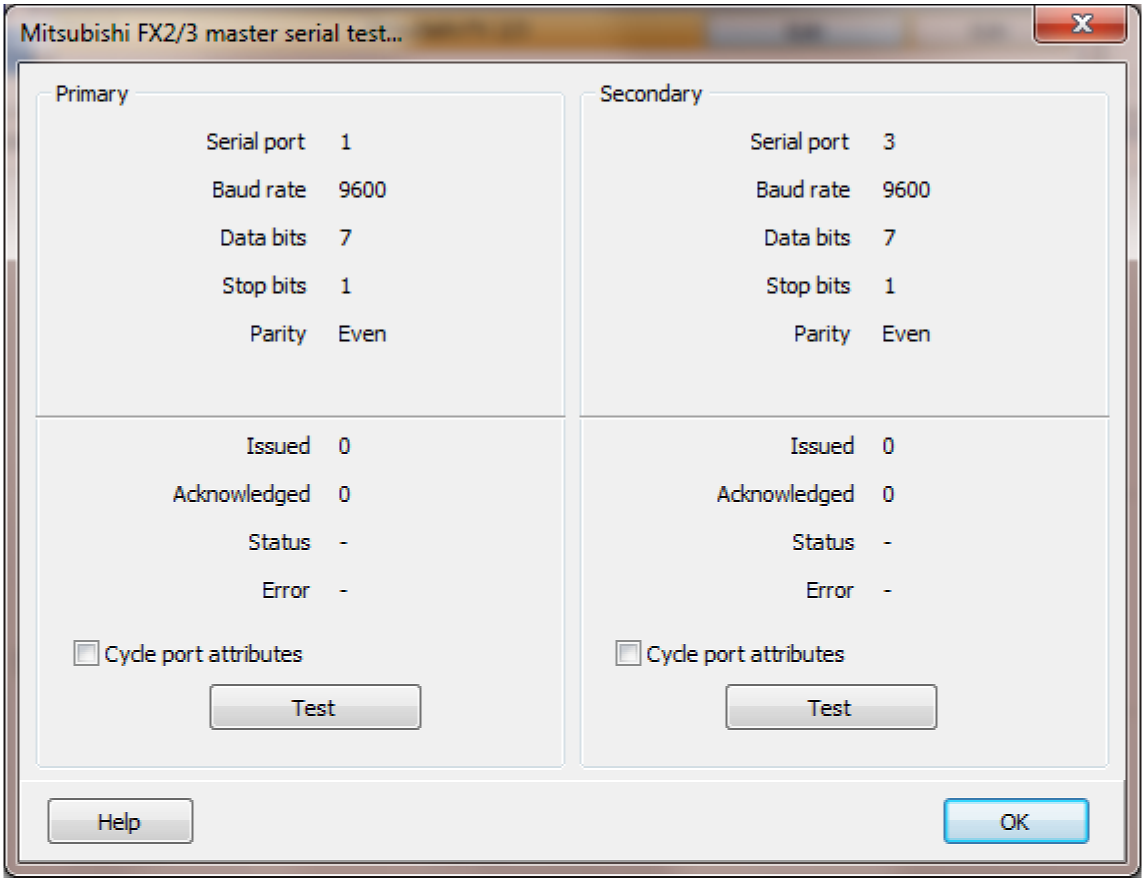
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button


Mitsubishi FX2/3 master serial test...

Primary

Serial port 1
Baud rate 9600
Data bits 7
Stop bits 1
Parity Even

Issued 0
Acknowledged 0
Status -
Error -

☐ Cycle port attributes

Secondary

Serial port 3
Baud rate 9600
Data bits 7
Stop bits 1
Parity Even

Issued 0
Acknowledged 0
Status -
Error -

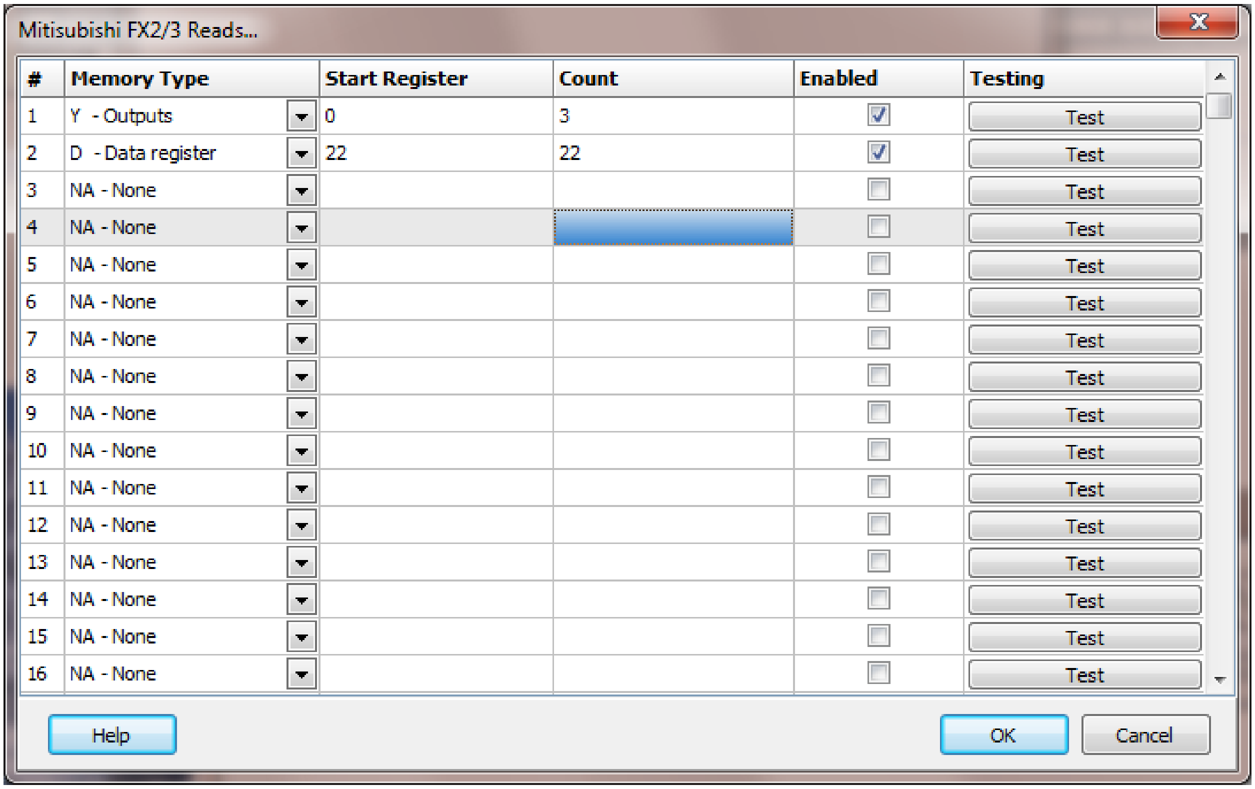
☐ Cycle port attributes

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



Mitsubishi FX2/3 Reads...

#	Memory Type	Start Register	Count	Enabled	Testing
1	Y - Outputs	0	3	☑	Test
2	D - Data register	22	22	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in octal.

Address Examples

X0, X105, Y3, Y77	Inputs and outputs are in octal.
M2, M90	
MS8000, MS8255	
SR8000	default for this type is word
SR8002	point is configured for longword or float
TS3, TS89	
CS4, CS90	
TR4, TR8	
CR34, CR56	
T4, T67	word access to the timer accumulator
C56, C77	word access to the counter
CX8, CX72	longword access to the counter accumulator
S2, S90	
D1	default for this type is word
D0	point is configured for longword or float

Notes:

1. Do not use leading zeros in the address string.
2. When modifying a bit in a non-bit register, all other bits in the register are cleared.

Register Type

The supported FX0/1 registers.

Register Type	**Prefix**	**Radix**	**Count**	**Data Type**
Input	X	Octal	Byte	Bit
Output	Y	Octal	Byte	Bit
Auxiliary relays	M	Decimal	Byte	Bit
Special auxiliary relays	MS	Decimal	Byte	Bit
Special data register	SR	Decimal	Word	Word, longword, float
Timer state	TS	Decimal	Byte	Bit
Counter state	CS	Decimal	Byte	Bit
Timer reset	TR	Decimal	Byte	Bit
Counter reset	CR	Decimal	Byte	Bit
Timer	T	Decimal	Word	Word
Counter	C	Decimal	Word	Word
Counter (32 bit)	CX	Decimal	Word	Longword
States	S	Decimal	Byte	Bit
Data register	D	Decimal	Word	Word, longword, float

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values. Enter the starting register value, in octal.

1. Special auxiliary relays minimum start register is 8000.
2. Special data register minimum start register is 8000.

Count

The number of registers to read for the request in decimal. The memory type and slave device determine the maximum number of registers that can be read. The protocol has a maximum of 64 bytes of data.

1. For bit data each count value returns 8 bits starting at "start register". The bit address must be byte aligned.
2. For timers and 16 bit counters the count is the number of timers. Each timer/counter is 2 bytes
3. For 32 bit counters the count is the number of counters. Each counter is 4 bytes.
4. When reading data registers and the point data type is longword or float the count must include all bytes. (4 per value)
5. When referencing 32 bit counters apply the start address from the start address for the PLC type. (CX0 = 32 bit start counter in PLC)

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

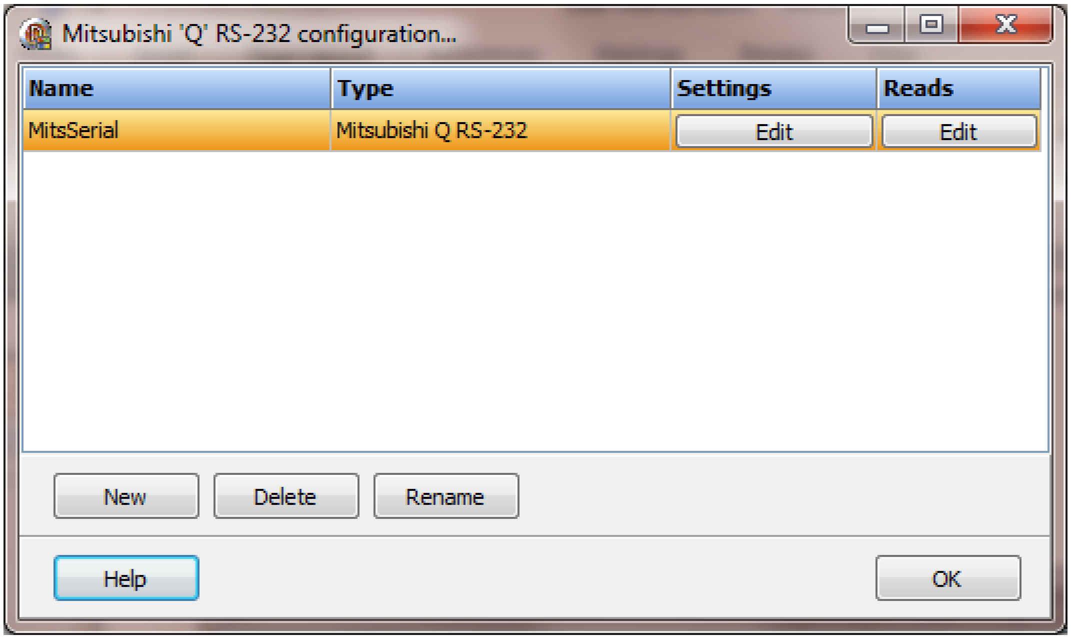
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Start register is not octal	All register references are in octal.

MITSUBISHI Q SERIAL

Each Mitsubishi Q master object is listed in the window.



Name	Type	Settings	Reads
MitsSerial	Mitsubishi Q RS-232	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Mitsubishi Q master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Mitsubishi Q master object select the "Delete" button.

The port uses protocol 3C (ASCII), format 1/4 with checksum enabled/disabled.

We used the following switch settings for the QJ741C24 module, section 4.5.2 of MELSEC System Q Programmable Logic Controllers User's Manual (Basic). **NOTE:** You must cycle power on the module for changes to the switch settings to become active.

Format 1 with checksum

Switch 1/3 07E6 (hex)

The first byte 07 (hex) is for baud rate of 19200.
The second byte E6 (hex) is for 8 data bits, parity enabled, parity odd, 1 stop bit, sum check code enabled, writing during run and settings modifications allowed.

Switch 2/4 0001 (hex)

Frame 3C format 1

Switch 5 0000 (hex)

Station 0

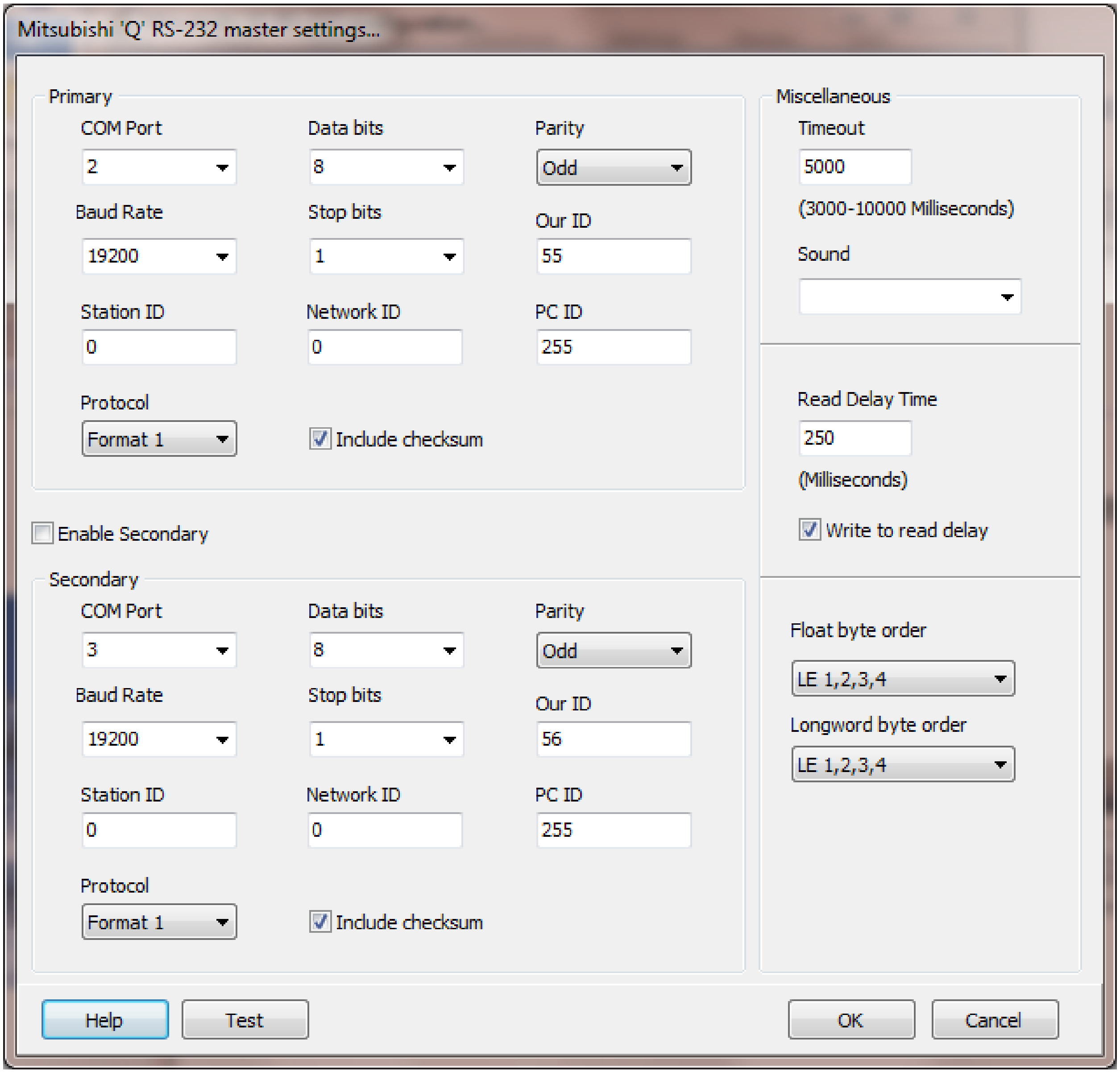
Format 4 with checksum

Switch 2/4 0004 (hex)

Frame 3C format 4

All the other settings are the same as format 1 with checksum, above.

Settings



Mitsubishi 'Q' RS-232 master settings...

Primary

COM Port: 2
Data bits: 8
Parity: Odd
Baud Rate: 19200
Stop bits: 1
Our ID: 55
Station ID: 0
Network ID: 0
PC ID: 255
Protocol: Format 1
☑ Include checksum

☐ Enable Secondary

Secondary

COM Port: 3
Data bits: 8
Parity: Odd
Baud Rate: 19200
Stop bits: 1
Our ID: 56
Station ID: 0
Network ID: 0
PC ID: 255
Protocol: Format 1
☑ Include checksum

Miscellaneous

Timeout: 5000
(3000-10000 Milliseconds)
Sound:
Read Delay Time: 250
(Milliseconds)
☑ Write to read delay
Float byte order: LE 1,2,3,4
Longword byte order: LE 1,2,3,4

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

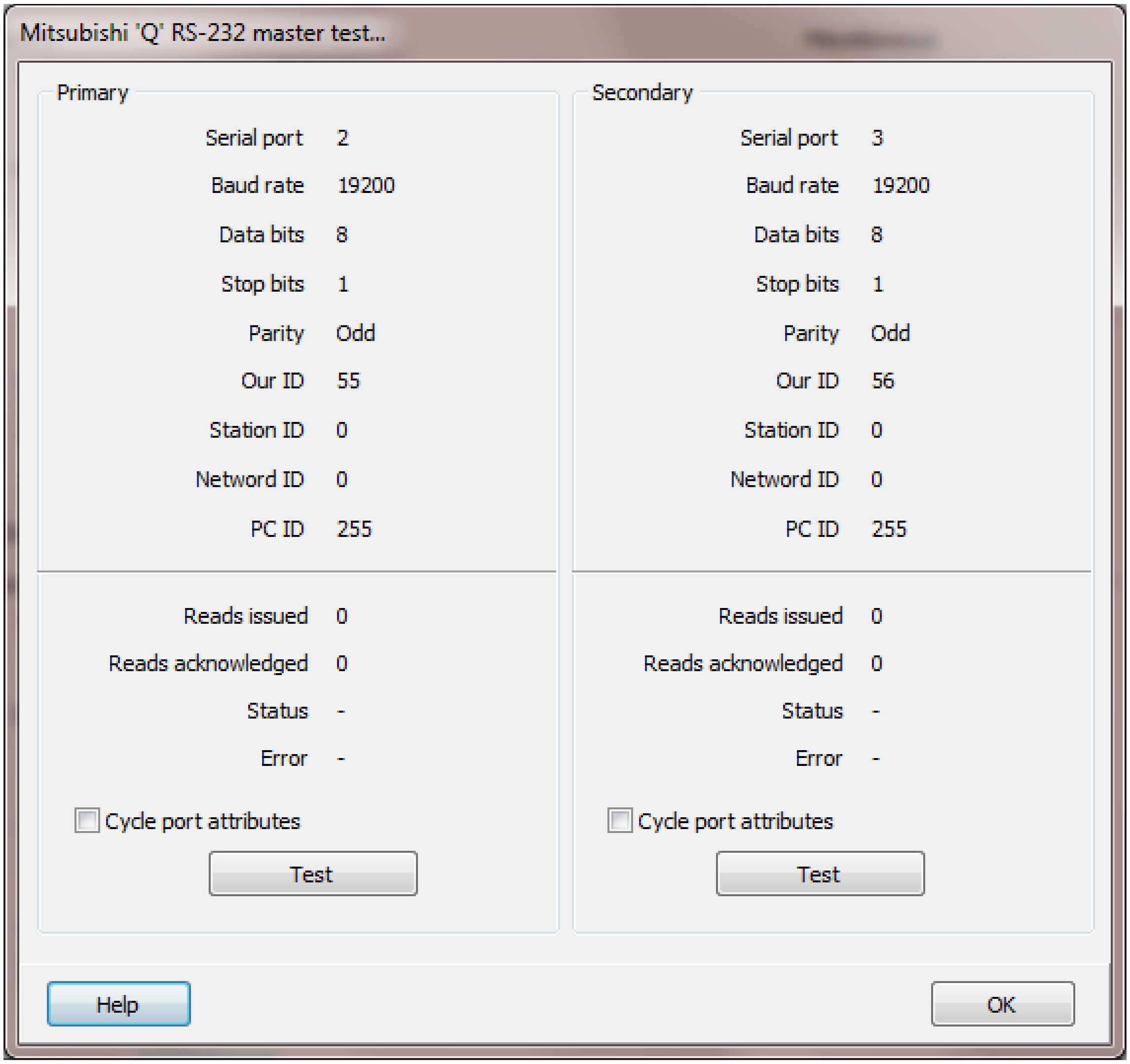
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button



Mitsubishi 'Q' RS-232 master test...

Primary

Serial port 2

Baud rate 19200

Data bits 8

Stop bits 1

Parity Odd

Our ID 55

Station ID 0

Netword ID 0

PC ID 255

Reads issued 0

Reads acknowledged 0

Status -

Error -

☐ Cycle port attributes

Secondary

Serial port 3

Baud rate 19200

Data bits 8

Stop bits 1

Parity Odd

Our ID 56

Station ID 0

Netword ID 0

PC ID 255

Reads issued 0

Reads acknowledged 0

Status -

Error -

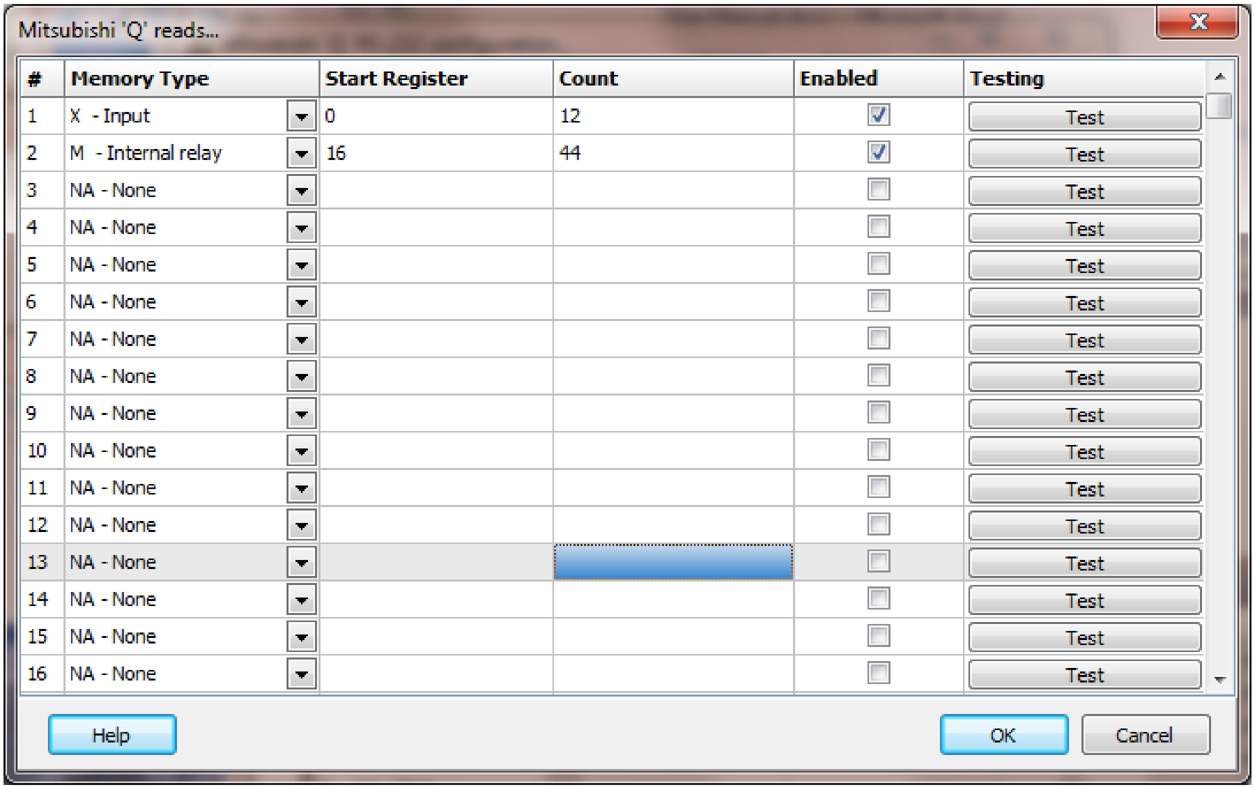
☐ Cycle port attributes

When the test button is selected the program will send a read request to read one word starting at X0.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	X - Input	0	12	☑	Test
2	M - Internal relay	16	44	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave.

Address Examples

X0, XF1, YA, Y34	Inputs and outputs are in hexadecimal.
M2, M90	
M8000, M8255	
TS3, TS89	
CS4, CS90	
TR4, TR8	
CR34, CR56	
T4, T67	word access to the timer accumulator
C56, C77	word access to the counter
S2, S90	
D1	default for this type is word
D0	point is configured for longword or float

Notes:
1. Do not use leading zeros in the address string.

Register Type

The supported Mitsubishi Q registers.

Register Type	Prefix	Radix	Data Type
Input	X	Hexadecimal	Boolean
Output	Y	Hexadecimal	Boolean
Internal relay	M	Decimal	Boolean
Latch relay	L	Decimal	Boolean
Link relay	B	Hexadecimal	Boolean
Annunciator	F	Decimal	Boolean
Link special relay	SB	Hexadecimal	Boolean
Edge relay	V	Decimal	Boolean
Step relay	S	Decimal	Boolean
Timer	T	Decimal	Word
Timer reset	TR	Decimal	Boolean
Timer state	TS	Decimal	Boolean
Retentive timer	ST	Decimal	Boolean
Retentive timer reset	RR	Decimal	Word
Retentive timer state	RS	Decimal	Word
Counter	C	Decimal	Word
Counter reset	CR	Decimal	Boolean
Counter state	CS	Decimal	Boolean
Data register	D	Decimal	Word, longword, float
Link register	W	Hexadecimal	Word, longword, float
Link special register	SW	Hexadecimal	Word, longword, float
Special internal relay	SM	Decimal	Boolean
Special internal register	SD	Decimal	Word, longword, float
Index register	Z	Decimal	Word, longword, float
File register	RS	Decimal	Word, longword, float
Direct input	DX	Hexadecimal	Boolean
Direct output	DY	Hexadecimal	Boolean

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for allowable register values. Enter the starting register value in the correct type. See above.

Count

The number of words to read for the request in decimal. The memory type and slave device determine the maximum number of registers that can be read.
1. For Boolean data each count value returns 16 Booleans starting at "start register".
2. When reading registers and the point data type is longword or float the count must include all bytes. (4 per value)
3. Boolean data start register value must be word aligned.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data is not used for alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

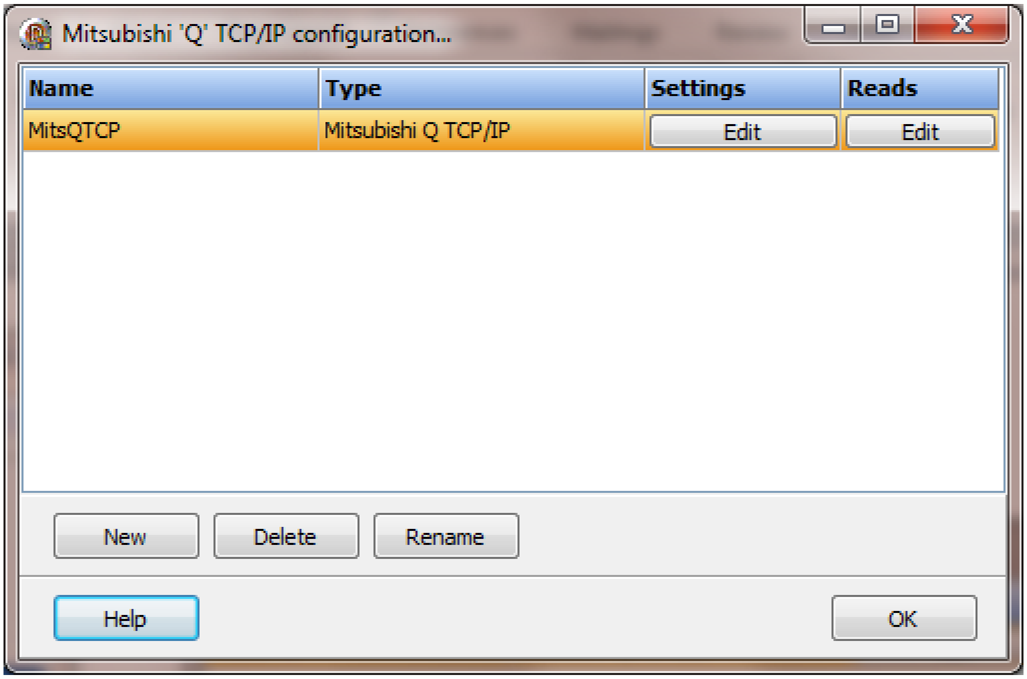
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

MITSUBISHI Q TCP

Each Mitsubishi Q master object is listed in the window.


Mitsubishi 'Q' TCP/IP configuration...
New
Delete
Rename
Help
OK

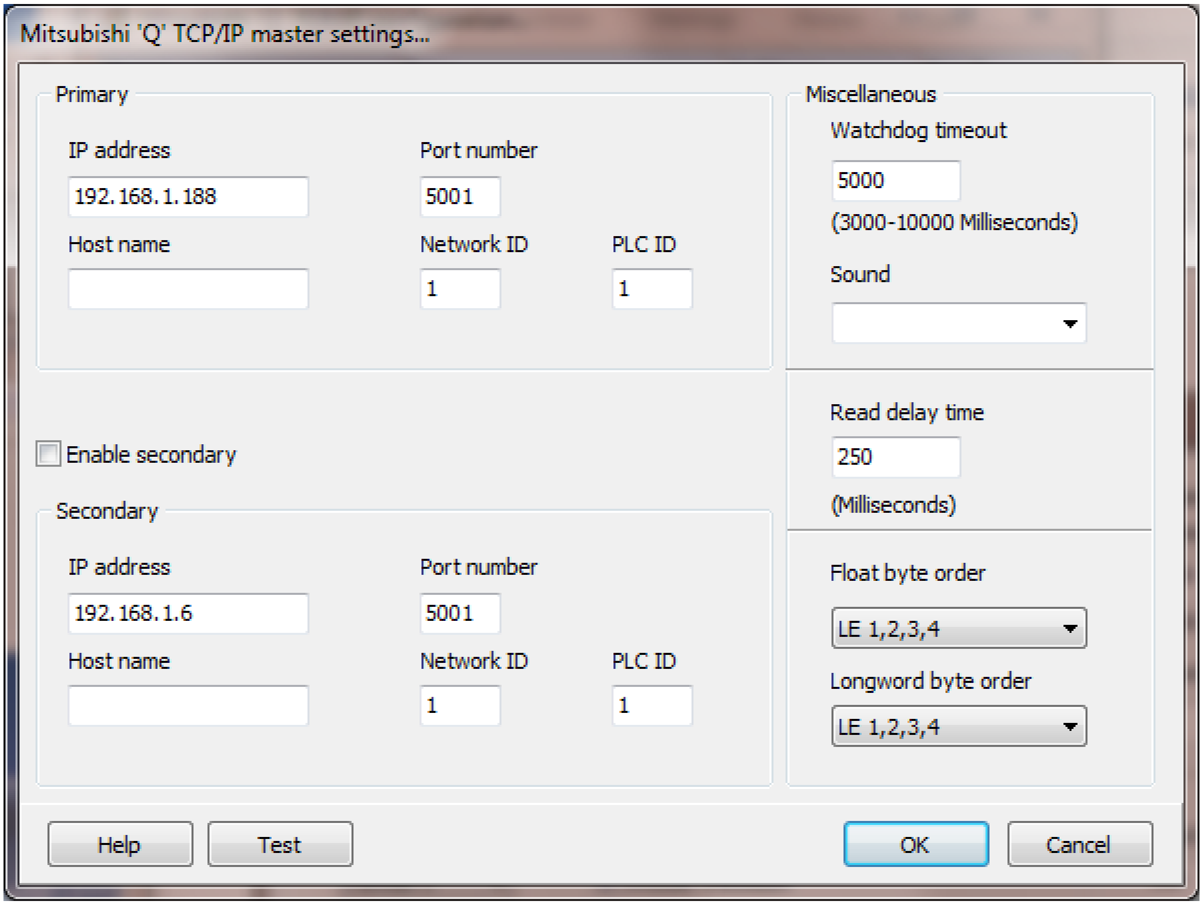
Name	Type	Settings	Reads
MitsQTCP	Mitsubishi Q TCP/IP	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Mitsubishi Q master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Mitsubishi Q master object select the "Delete" button.

Settings



Mitsubishi 'Q' TCP/IP master settings...

Primary

IP address: 192.168.1.188

Port number: 5001

Host name:

Network ID: 1

PLC ID: 1

☐ Enable secondary

Secondary

IP address: 192.168.1.6

Port number: 5001

Host name:

Network ID: 1

PLC ID: 1

Miscellaneous

Watchdog timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read delay time: 250

(Milliseconds)

Float byte order: LE 1,2,3,4

Longword byte order: LE 1,2,3,4

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

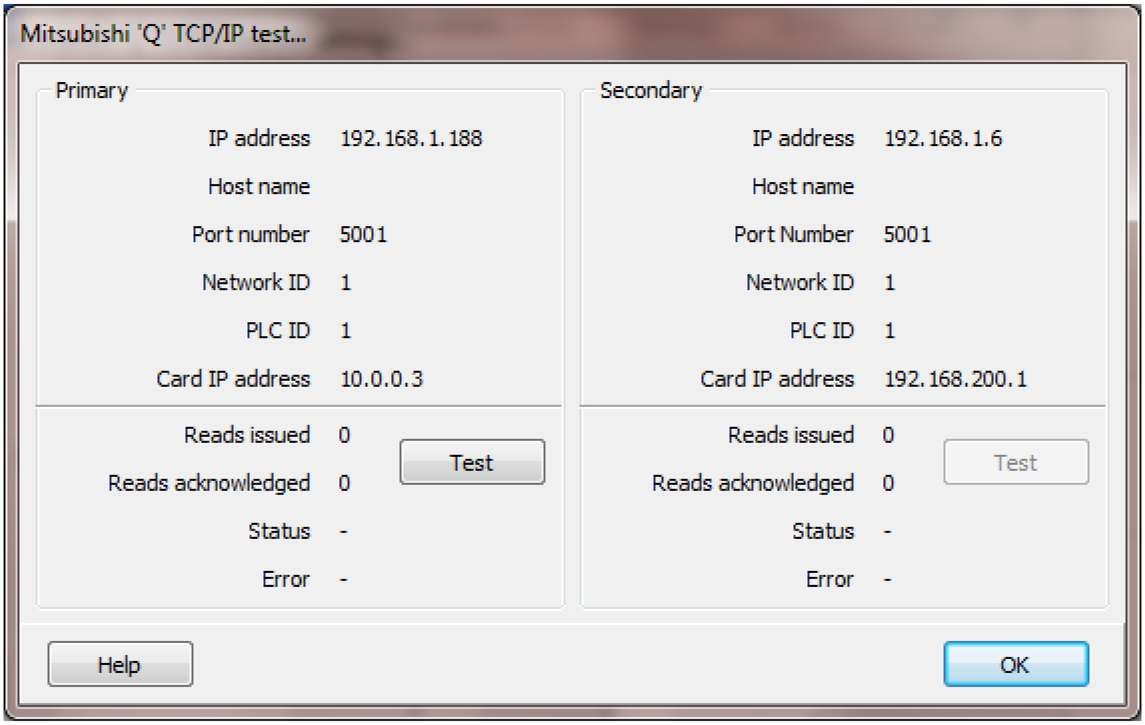
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button



Primary

IP address 192.168.1.188
Host name
Port number 5001
Network ID 1
PLC ID 1
Card IP address 10.0.0.3
Reads issued 0
Reads acknowledged 0
Status -
Error -

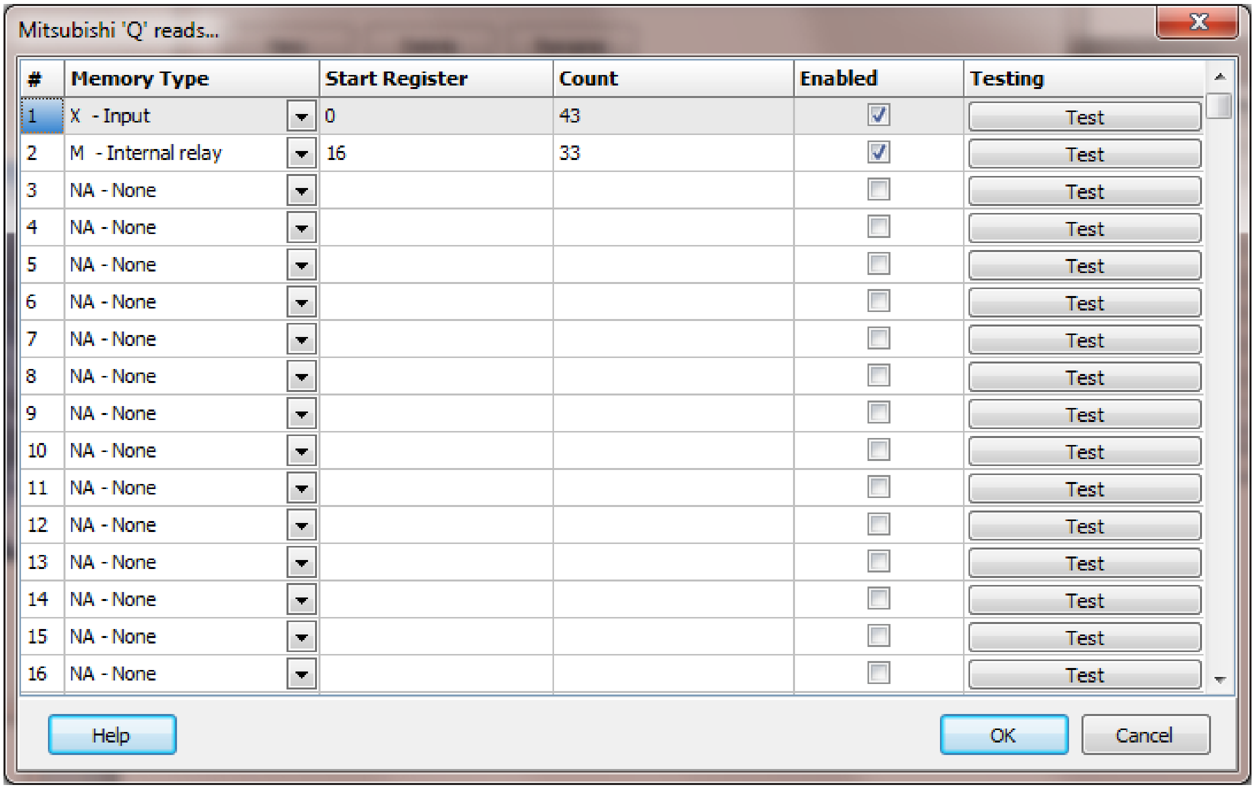
Secondary

IP address 192.168.1.6
Host name
Port Number 5001
Network ID 1
PLC ID 1
Card IP address 192.168.200.1
Reads issued 0
Reads acknowledged 0
Status -
Error -

When the test button is selected the program will send a read request to read one word starting at X0.

If a "host name" is entered the IP address is ignored.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	X - Input	0	43	☑	Test
2	M - Internal relay	16	33	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave.

Address Examples

X0, XF1, YA, Y34	Inputs and outputs are in hexadecimal.
M2, M90	
M8000, M8255	
TS3, TS89	
CS4, CS90	
TR4, TR8	
CR34, CR56	
T4, T67	word access to the timer accumulator
C56, C77	word access to the counter
S2, S90	
D1	default for this type is word
D0	point is configured for longword or float

Notes:

1. Do not use leading zeros in the address string.

Register Type

The supported Mitsubishi Q registers.

Register Type	Prefix	Radix	Data Type
Input	X	Hexadecimal	Boolean
Output	Y	Hexadecimal	Boolean
Internal relay	M	Decimal	Boolean
Latch relay	L	Decimal	Boolean
Link relay	B	Hexadecimal	Boolean
Annunciator	F	Decimal	Boolean
Link special relay	SB	Hexadecimal	Boolean
Edge relay	V	Decimal	Boolean
Step relay	S	Decimal	Boolean
Timer	T	Decimal	Word
Timer reset	TR	Decimal	Boolean
Timer state	TS	Decimal	Boolean
Retentive timer	ST	Decimal	Boolean
Retentive timer reset	RR	Decimal	Word
Retentive timer state	RS	Decimal	Word
Counter	C	Decimal	Word
Counter reset	CR	Decimal	Boolean
Counter state	CS	Decimal	Boolean
Data register	D	Decimal	Word, longword, float
Link register	W	Hexadecimal	Word, longword, float
Link special register	SW	Hexadecimal	Word, longword, float
Special internal relay	SM	Decimal	Boolean
Special internal register	SD	Decimal	Word, longword, float
Index register	Z	Decimal	Word, longword, float
File register	RS	Decimal	Word, longword, float
Direct input	DX	Hexadecimal	Boolean
Direct output	DY	Hexadecimal	Boolean

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for allowable register values. Enter the starting register value in the correct type. See above.

Count

The number of words to read for the request in decimal. The memory type and slave device determine the maximum number of registers that can be read.
1. For Boolean data each count value returns 16 Booleans starting at "start register".
2. When reading registers and the point data type is longword or float the count must include all bytes. (4 per value)
3. Boolean data start register value must be word aligned.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data is not used for alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

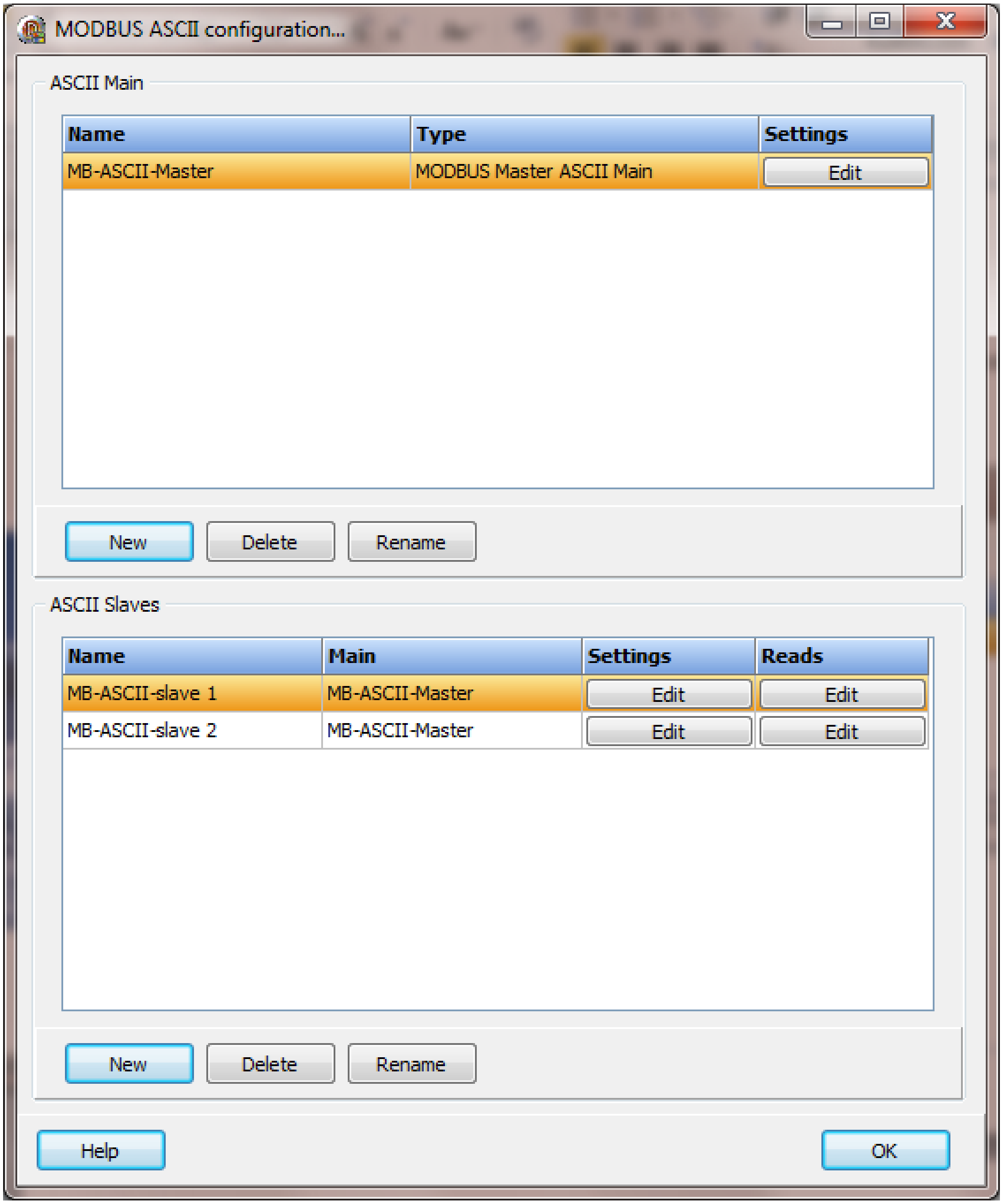
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

MODBUS Master ASCII Serial 232/485

Each MODBUS ASCII master object controls one serial port and can have one or many slave objects. The slaves are configured to address one device.


MODBUS ASCII configuration...
ASCII Main
New
Delete
Rename
ASCII Slaves
New
Delete
Rename
Help
OK

Name	Type	Settings
MB-ASCII-Master	MODBUS Master ASCII Main	Edit

Name	Main	Settings	Reads
MB-ASCII-slave 1	MB-ASCII-Master	Edit	Edit
MB-ASCII-slave 2	MB-ASCII-Master	Edit	Edit

Note: RS-485 is sensitive to improper wiring and/or terminations. Unpowered units can cause data echoes and other reliability issues. Please follow all RS-485 wiring guidelines.

MODBUS ASCII serial main

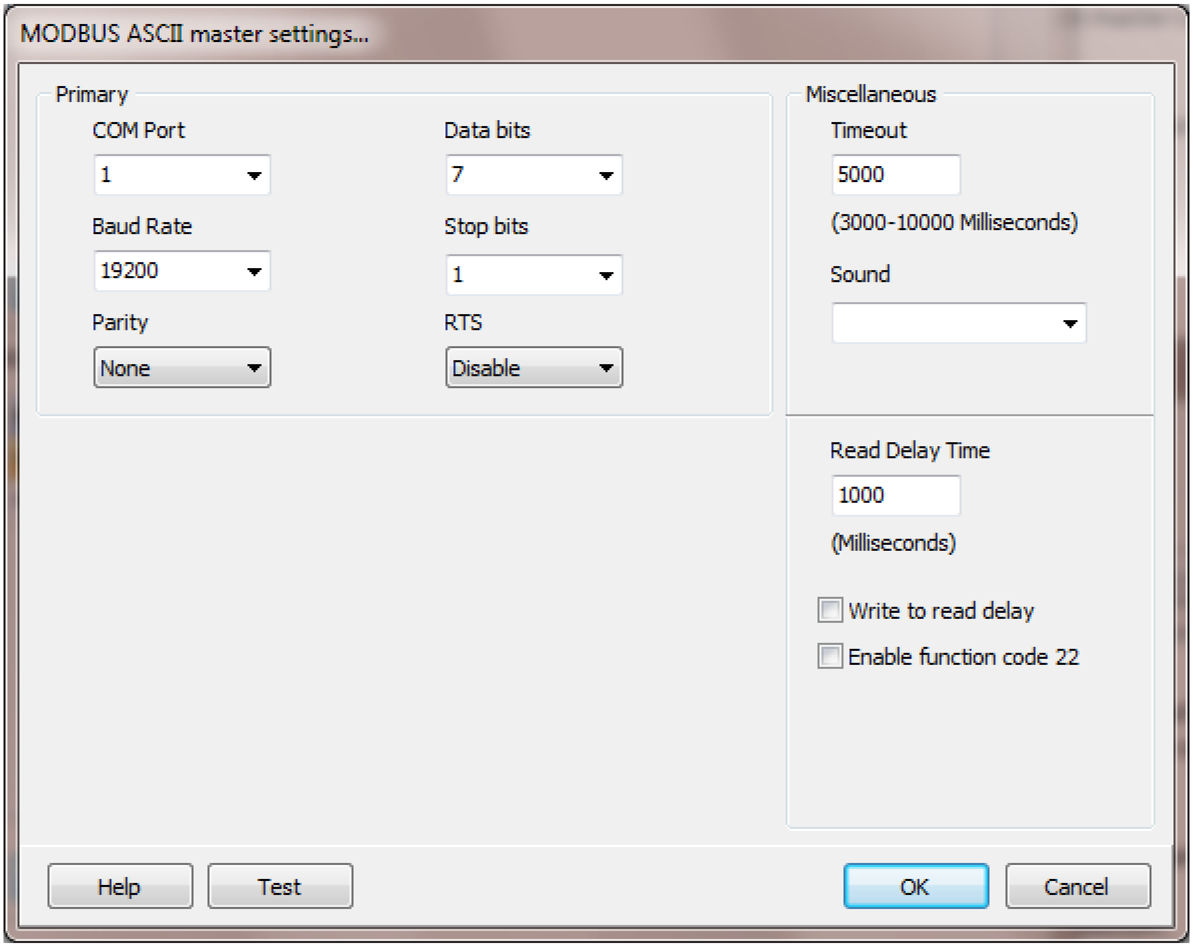
Each MODBUS ASCII master object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS ASCII master object select the "Delete" button.

Settings



MODBUS ASCII master settings...

Primary

COM Port: 1

Data bits: 7

Baud Rate: 19200

Stop bits: 1

Parity: None

RTS: Disable

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 1000

(Milliseconds)

☐ Write to read delay

☐ Enable function code 22

Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Note: The default data bit count is 7. Some devices do not support 8 bit data bytes for MODBUS ASCII.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data was received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

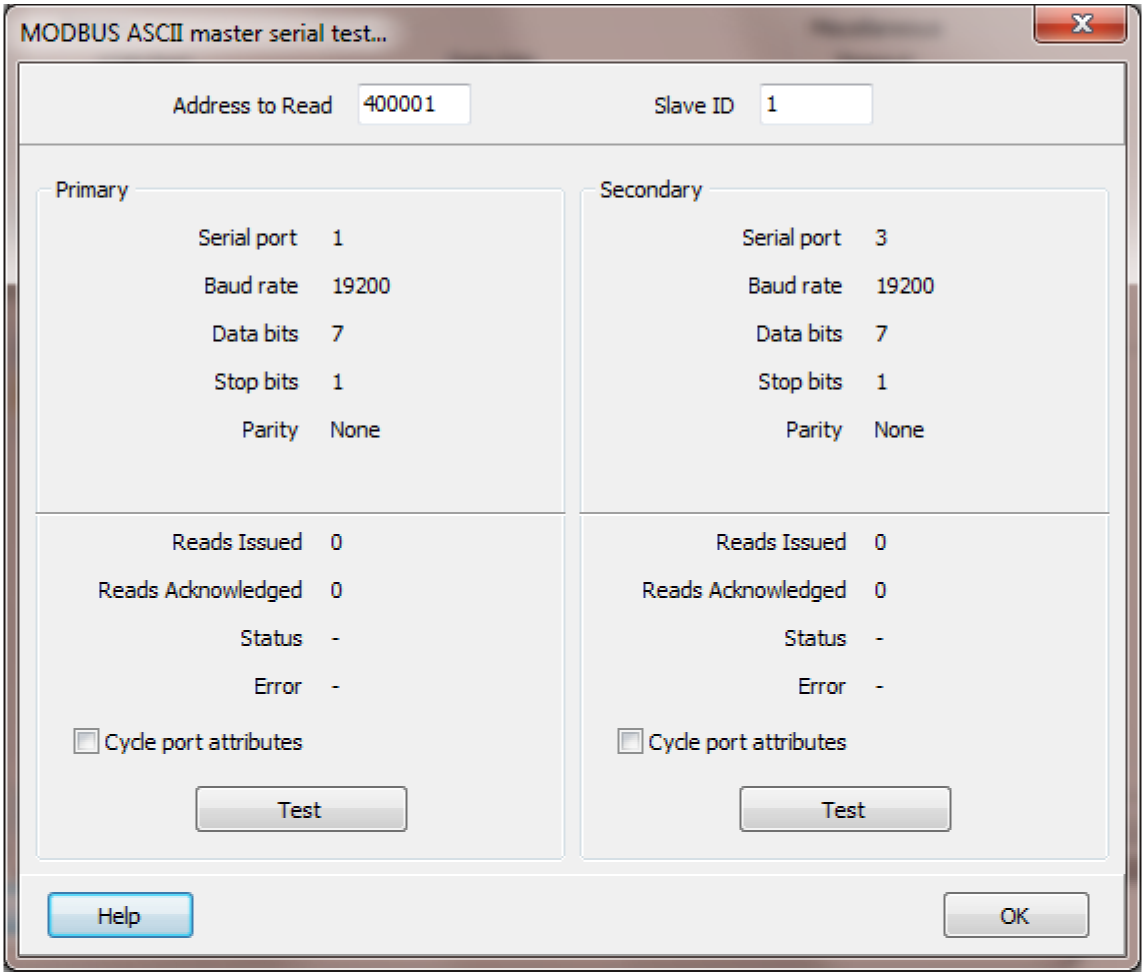
Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Enable function code 22

When enabled and a bit write to a holding register is requested, function code 22 (Mask write 4X register) will be used to set or clear the bit. If not enabled, function code 6 (Preset single register) will be used. Note: Not all devices support function code 22.

Test button


MODBUS ASCII master serial test...

Address to Read: 400001

Slave ID: 1

Primary

Serial port: 1

Baud rate: 19200

Data bits: 7

Stop bits: 1

Parity: None

Reads Issued: 0

Reads Acknowledged: 0

Status: -

Error: -

☐ Cycle port attributes

Secondary

Serial port: 3

Baud rate: 19200

Data bits: 7

Stop bits: 1

Parity: None

Reads Issued: 0

Reads Acknowledged: 0

Status: -

Error: -

☐ Cycle port attributes

When the test button is selected the program will attempt to read one word of data from the device at the address entered. If the address is a coil (0XXXXX) or an input (1XXXXX), an attempt to read 16 elements (one word) is performed.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

If an input or coil address is entered the program will attempt to read that address plus the following 15 to populate one word of data.

MODBUS ASCII Slaves

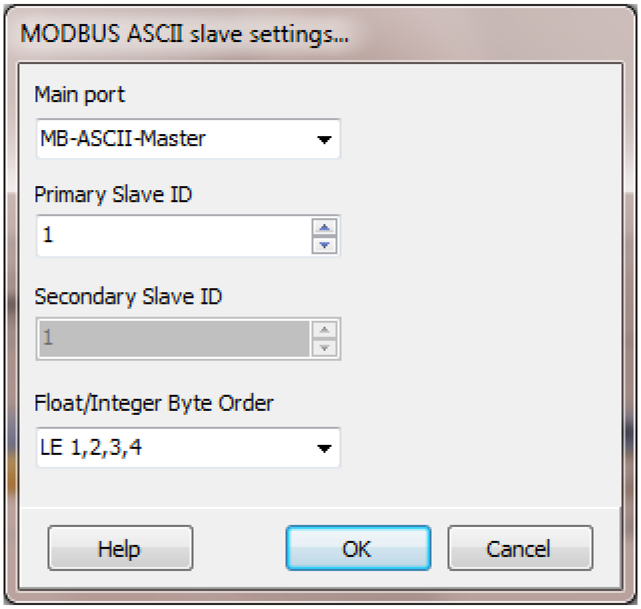
Each MODBUS ASCII slave object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible MODBUS slave objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS ASCII slave object select the "Delete" button.

Settings


MODBUS ASCII slave settings...

Main port: MB-ASCII-Master

Primary Slave ID: 1

Secondary Slave ID: 1

Float/Integer Byte Order: LE 1,2,3,4

Main port

This is the master RS-485 port the slave is linked to. A port must be linked to a master for runtime operations.

Primary station number
Secondary station number (Future)

This is the station number of the slave device for the primary and secondary. (1 - 255)

Float/Integer Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

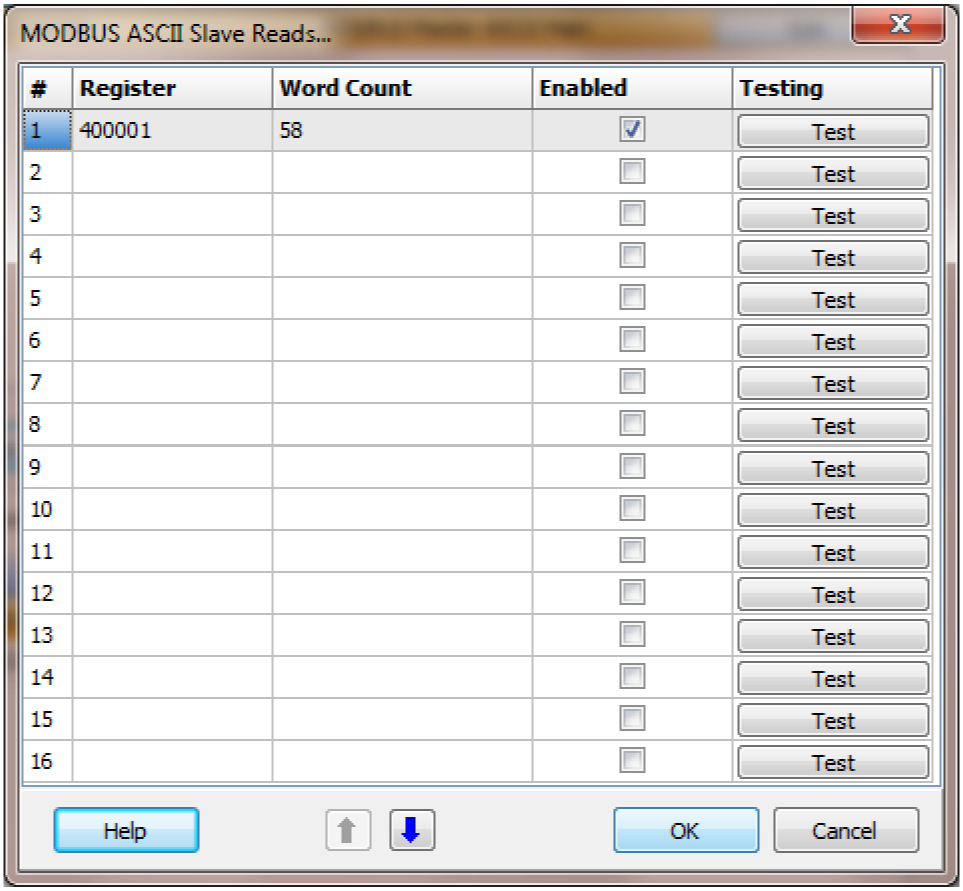
The MODBUS holding register data received from the slave device is in HI-LO byte order.

The data bytes are swapped and the result is stored in native format (LO-HI). Regular integer data and floating data values can be in the same data read.

The 4 byte float option is configured on a point level. The integer data is converted into a floating point value at the point level. Because the data bytes have already been swapped the conversion to a floating point value uses method index 3. If the byte swap had not been done at the table read level method index 4 would be the default.

When using floating point values the byte order of the slave device might be different than the regular holding register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Reads



#	Register	Word Count	Enabled	Testing
1	400001	58	☑	Test
2			☐	Test
3			☐	Test
4			☐	Test
5			☐	Test
6			☐	Test
7			☐	Test
8			☐	Test
9			☐	Test
10			☐	Test
11			☐	Test
12			☐	Test
13			☐	Test
14			☐	Test
15			☐	Test
16			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the 6 digit MODBUS register address numbering system.

Register

The address must be a valid MOBUS address and not refer to a bit in a holding or input register.

Any of the following addresses are valid:
000001 - 065535
100001 - 165535
300001 - 365535
400001 - 465535

Invalid address would be any that refer to a bit in a word

All of the following addresses are invalid for configuration of the reads. (All are legal for point source addressing.)

400001/01 or 300001/01

Word Count

Each read can request up to 125 words of data. For input and holding registers that would be 125 registers.

For coils and inputs that would be 125 * 16 (2000) single bits of data.

For example:

Register	**Count**	**Result**
400001	1	1 Holding Register
303521	4	4 Input Registers
100001	1	16 Inputs
000001	2	32 Coils
000016	125	2000 Coils

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

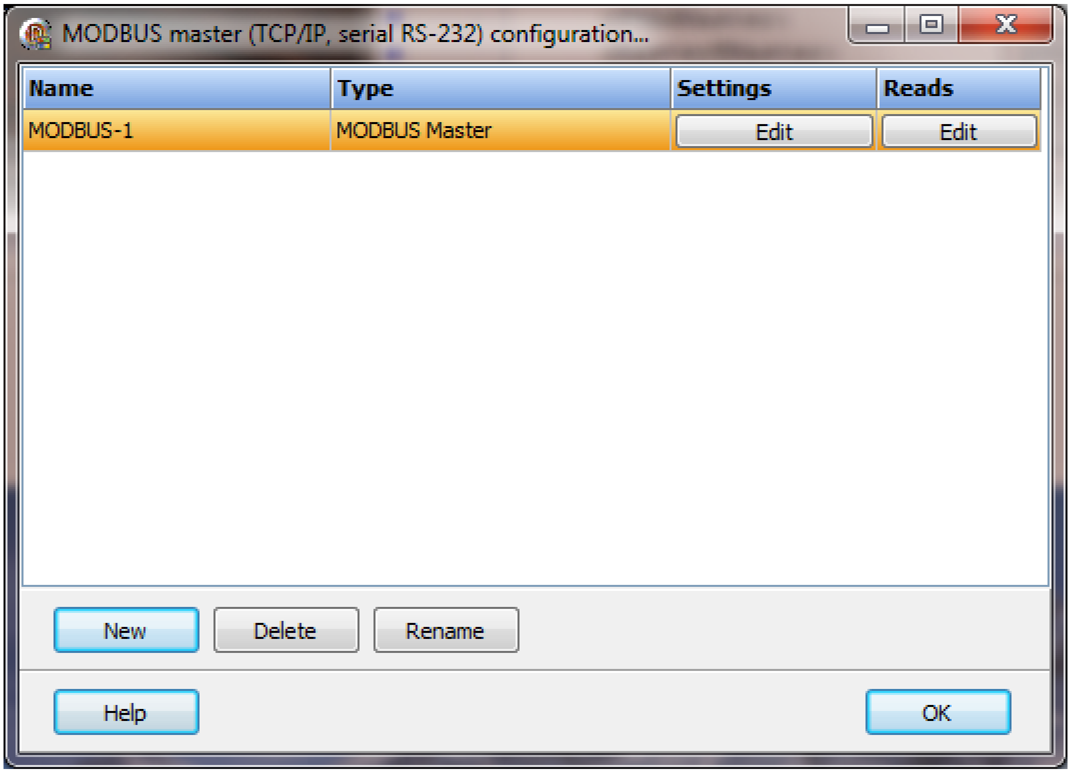
Error messages

No register address	The value in the field is not a MODBUS address.
Invalid count	The count must be between 1 and 125.
Exceeds 65535	The register plus the count exceeds the maximum address range.
Invalid MODBUS address	The value in the field is an invalid MODBUS address.
Bit field not allowed	The value in the field references a bit of a register.

MODBUS MASTER RTU SERIAL 232

MODBUS MASTER TCP

Each MODBUS master object is listed in the window.


MODBUS master (TCP/IP, serial RS-232) configuration...

Name	Type	Settings	Reads
MODBUS-1	MODBUS Master	Edit	Edit

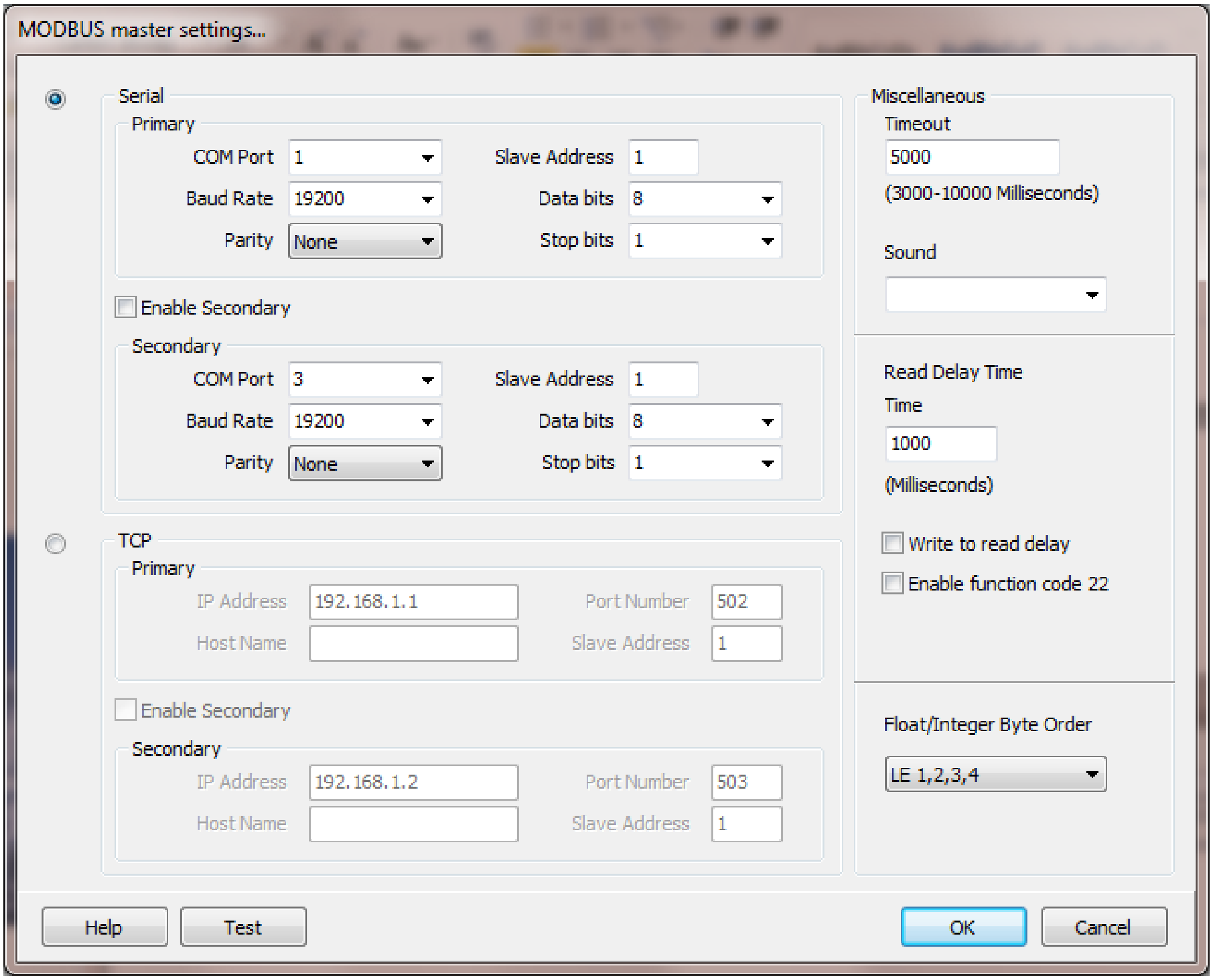
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible MODBUS master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS master object select the "Delete" button.

Settings



MODBUS master settings...

● Serial

Primary

COM Port: 1
Baud Rate: 19200
Parity: None
Slave Address: 1
Data bits: 8
Stop bits: 1

☐ Enable Secondary

Secondary

COM Port: 3
Baud Rate: 19200
Parity: None
Slave Address: 1
Data bits: 8
Stop bits: 1

○ TCP

Primary

IP Address: 192.168.1.1
Host Name:
Port Number: 502
Slave Address: 1

☐ Enable Secondary

Secondary

IP Address: 192.168.1.2
Host Name:
Port Number: 503
Slave Address: 1

Miscellaneous

Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time

Time: 1000
(Milliseconds)

☐ Write to read delay
☐ Enable function code 22

Float/Integer Byte Order: LE 1,2,3,4

Select either the serial or TCP radio button on the left side of the window.

Serial

The serial port has a primary port and if enabled a secondary port. Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second com port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary com port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

TCP

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second path to be used as a hot backup. When in run mode the primary configuration is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary configuration. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary configuration, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary configuration an entry will be made in the event log and operations will return to the primary port.

If the computer has two network interface cards (NIC) the program will use the first one detected for the primary and the second one detected for the secondary. If only one NIC is detected the program will use it for the primary and the secondary.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sounds delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Enable function code 22

When enabled and a bit write to a holding register is requested, function code 22 (Mask write 4X register) will be used to set or clear the bit. If not enabled, function code 6 (Preset single register) will be used. Note: Not all devices support function code 22.

Float/Integer Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

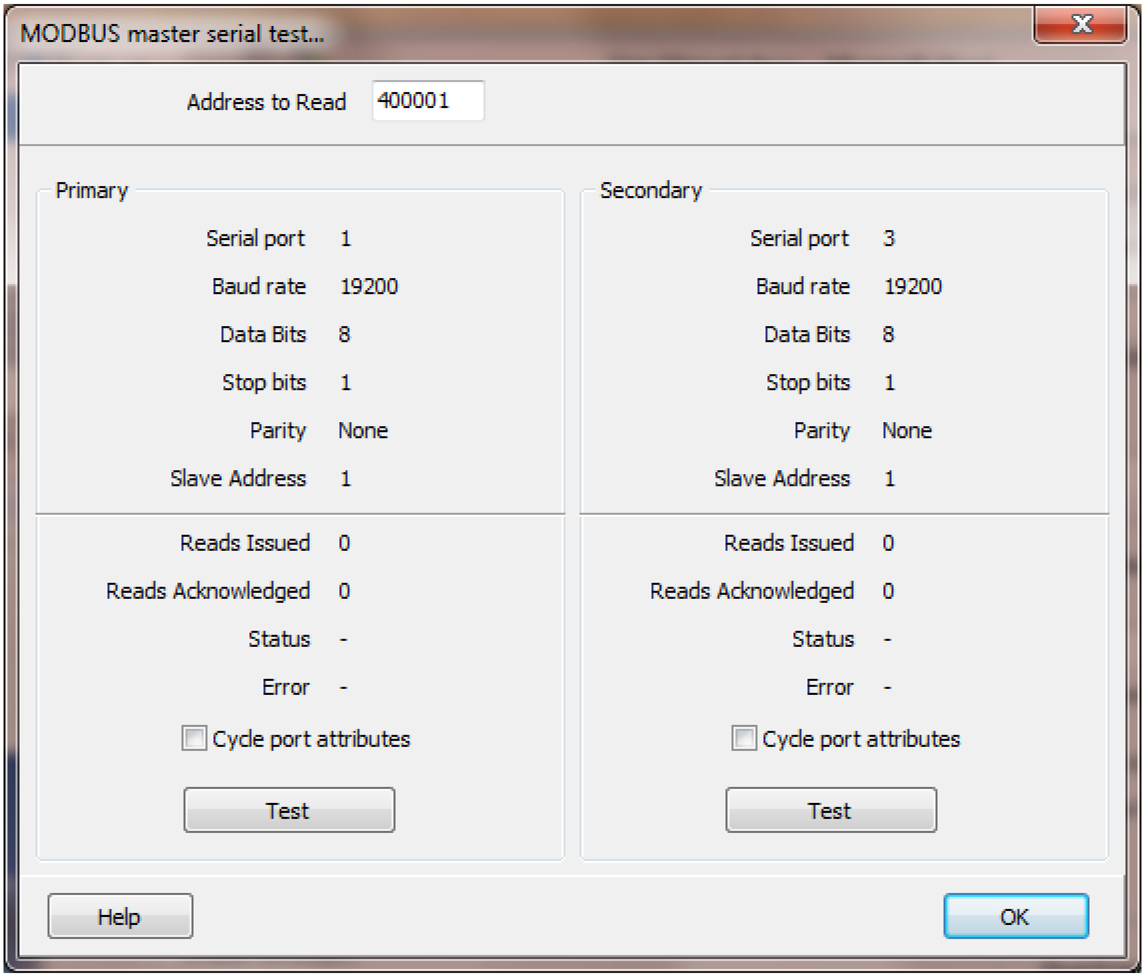
The MODBUS holding register data received from the slave device is in HI-LO byte order.

The data bytes are swapped and the result is stored in native format (LO-HI). Regular integer data and floating data values can be in the same data read.

The 4 byte float option is configured on a point level. The integer data is converted into a floating point value at the point level. Because the data bytes have already been swapped the conversion to a floating point value uses method index 3. If the byte swap had not been done at the table read level method index 4 would be the default.

Test button

Serial Testing



Address to Read 400001

Serial port 1
Baud rate 19200
Data Bits 8
Stop bits 1
Parity None
Slave Address 1
Reads Issued 0
Reads Acknowledged 0
Status -
Error -
☐ Cycle port attributes

Serial port 3
Baud rate 19200
Data Bits 8
Stop bits 1
Parity None
Slave Address 1
Reads Issued 0
Reads Acknowledged 0
Status -
Error -
☐ Cycle port attributes

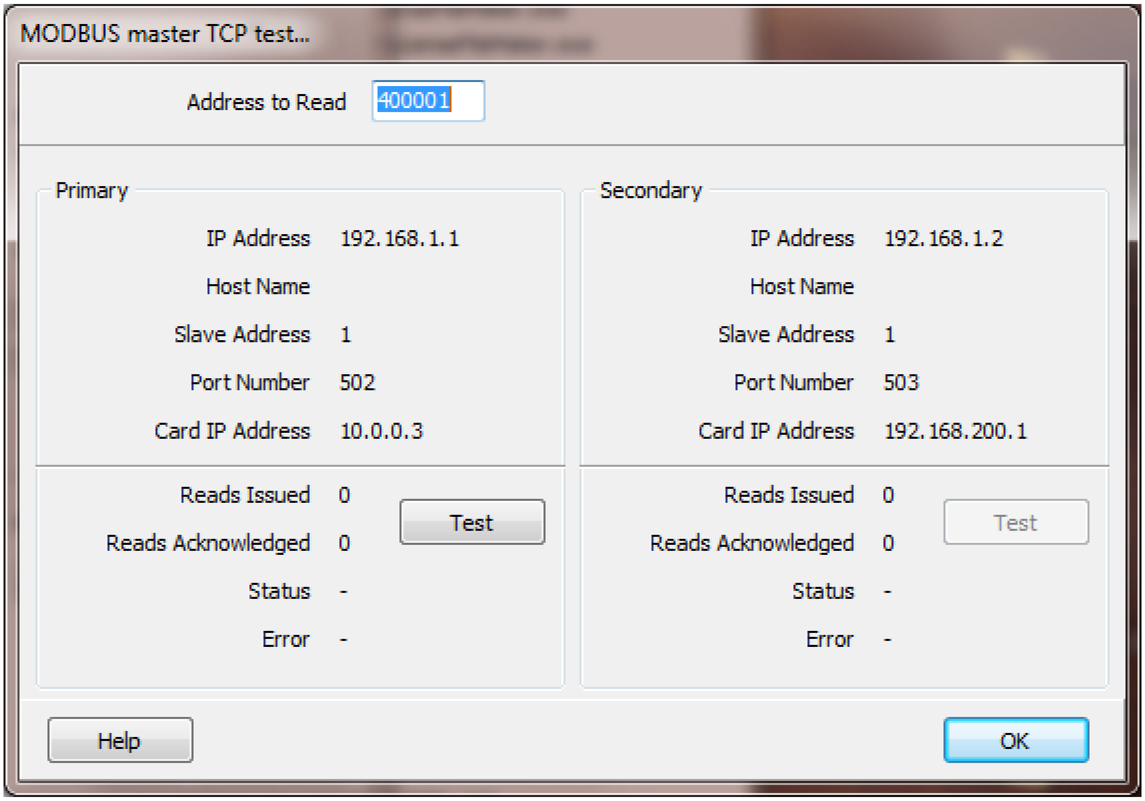
When the test button is selected the program will attempt to read one word of data from the device at the address entered. If the address is a coil (0XXXXX) or an input (1XXXXX), an attempt to read 16 elements (one word) is performed.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

If an input or coil address is entered the program will attempt to read that address plus the following 15 to populate one word of data.

TCP Testing



MODBUS master TCP test...

Address to Read 400001

Primary

IP Address 192.168.1.1
Host Name
Slave Address 1
Port Number 502
Card IP Address 10.0.0.3

Reads Issued 0
Reads Acknowledged 0
Status -
Error -

Secondary

IP Address 192.168.1.2
Host Name
Slave Address 1
Port Number 503
Card IP Address 192.168.200.1

Reads Issued 0
Reads Acknowledged 0
Status -
Error -

When the test button is selected the program will attempt to read one word of data from the device at the address entered. If the address is a coil (0XXXXX) or an input (1XXXXX), an attempt to read 16 elements (one word) is performed.

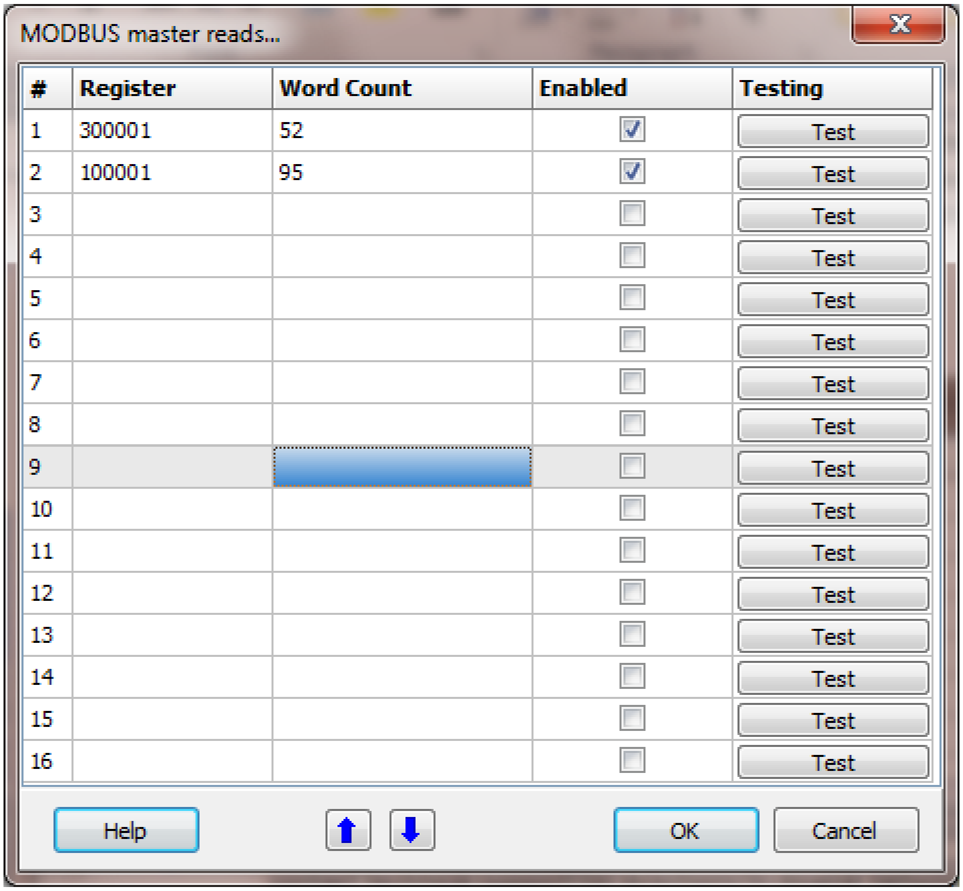
If the connection is the primary it will bind the socket to the first NIC detected.

If the connection is the secondary it will bind the socket to the second NIC if detected. If a second NIC is not installed it will bind the socket to the first NIC detected.
If a "host name" is entered the IP address is ignored.

Note: By design the primary port will attempt to use the first device in the network configuration list and the secondary connection, if enabled, will attempt to use the second device in the network configuration list. Change the list order as desired to get the connection path desired.

If this is not possible or allowing the OS to automatically define the path is desired contact technical support for directions to disable network port binding.

Reads



#	Register	Word Count	Enabled	Testing
1	300001	52	☑	Test
2	100001	95	☑	Test
3			☐	Test
4			☐	Test
5			☐	Test
6			☐	Test
7			☐	Test
8			☐	Test
9			☐	Test
10			☐	Test
11			☐	Test
12			☐	Test
13			☐	Test
14			☐	Test
15			☐	Test
16			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the 6 digit MODBUS register address numbering system.

Register

The address must be a valid MOBUS address and not refer to a bit in a holding or input register.

Any of the following addresses are valid:
000001 - 065535
100001 - 165535
300001 - 365535
400001 - 465535

Invalid address would be any that refer to a bit in a word

All of the following addresses are invalid for configuration of the reads. (All are legal for point source addressing.)

400001/01 or 300001/01

Word Count

Each read can request up to 125 words of data. For input and holding registers that would be 125 registers.

For coils and inputs that would be 125 * 16 (2000) single bits of data.

For example:

Register	**Count**	**Result**
400001	1	1 Holding Register
303521	4	4 Input Registers
100001	1	16 Inputs
000001	2	32 Coils
000016	125	2000 Coils

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

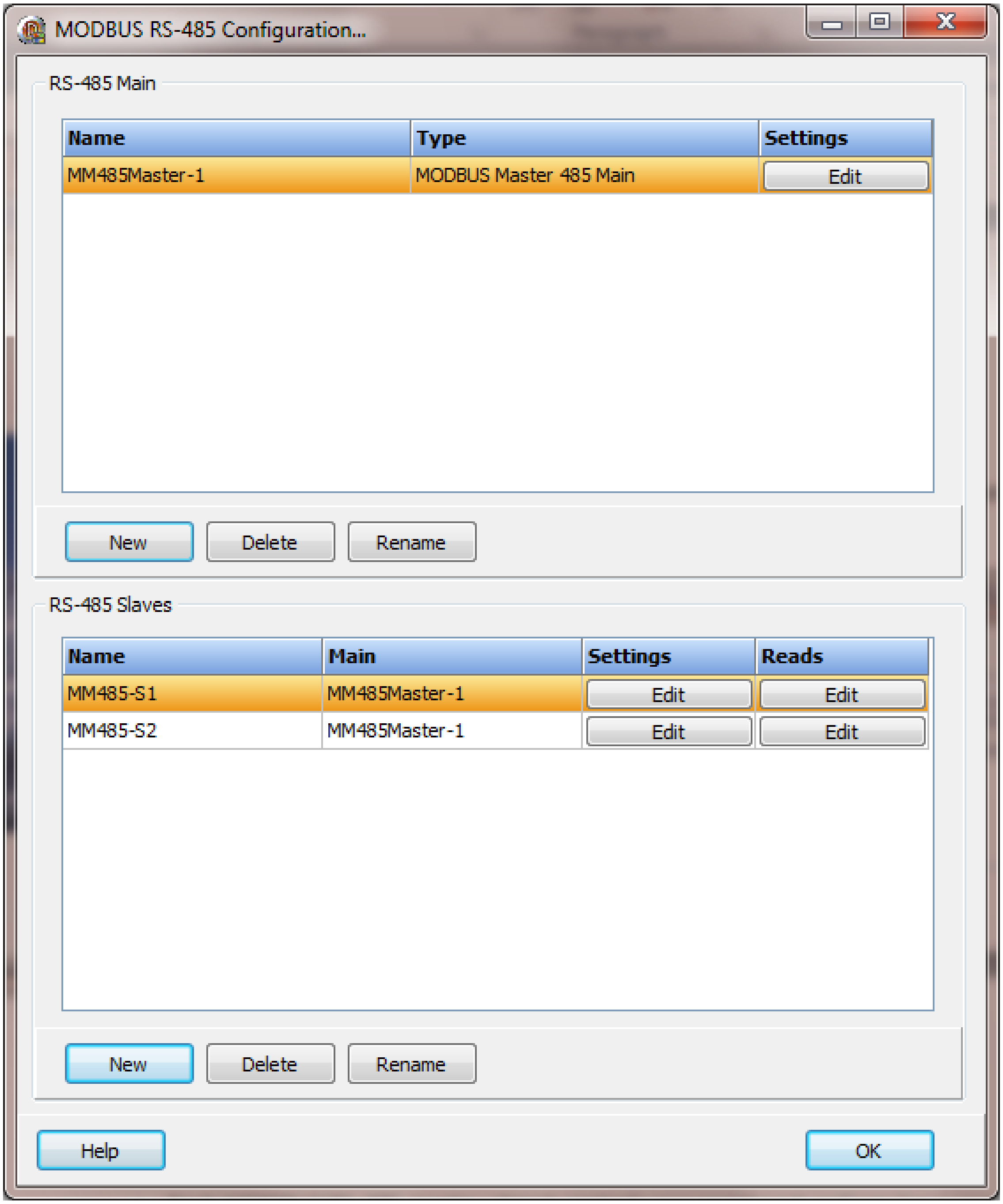
When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Error messages

No register address	The value in the field is not a MODBUS address.
Invalid count	The count must be between 1 and 125.
Exceeds 65535	The register plus the count exceeds the maximum address range.
Invalid MODBUS address	The value in the field is an invalid MODBUS address.
Bit field not allowed	The value in the field references a bit of a register.

MODBUS MASTERS RTU SERIAL 485

Each MODBUS RS-485 master object controls one serial port and can have one or many slave objects. The slaves are configured to address one device.


MODBUS RS-485 Configuration...
RS-485 Main
New
Delete
Rename
RS-485 Slaves
New
Delete
Rename
Help
OK

Name	Type	Settings
MM485Master-1	MODBUS Master 485 Main	Edit

Name	Main	Settings	Reads
MM485-S1	MM485Master-1	Edit	Edit
MM485-S2	MM485Master-1	Edit	Edit

Note: RS-485 is sensitive to improper wiring and/or terminations. Unpowered units can cause data echoes and other reliability issues. Please follow all RS-485 wiring guidelines.

MODBUS RS-485 serial main

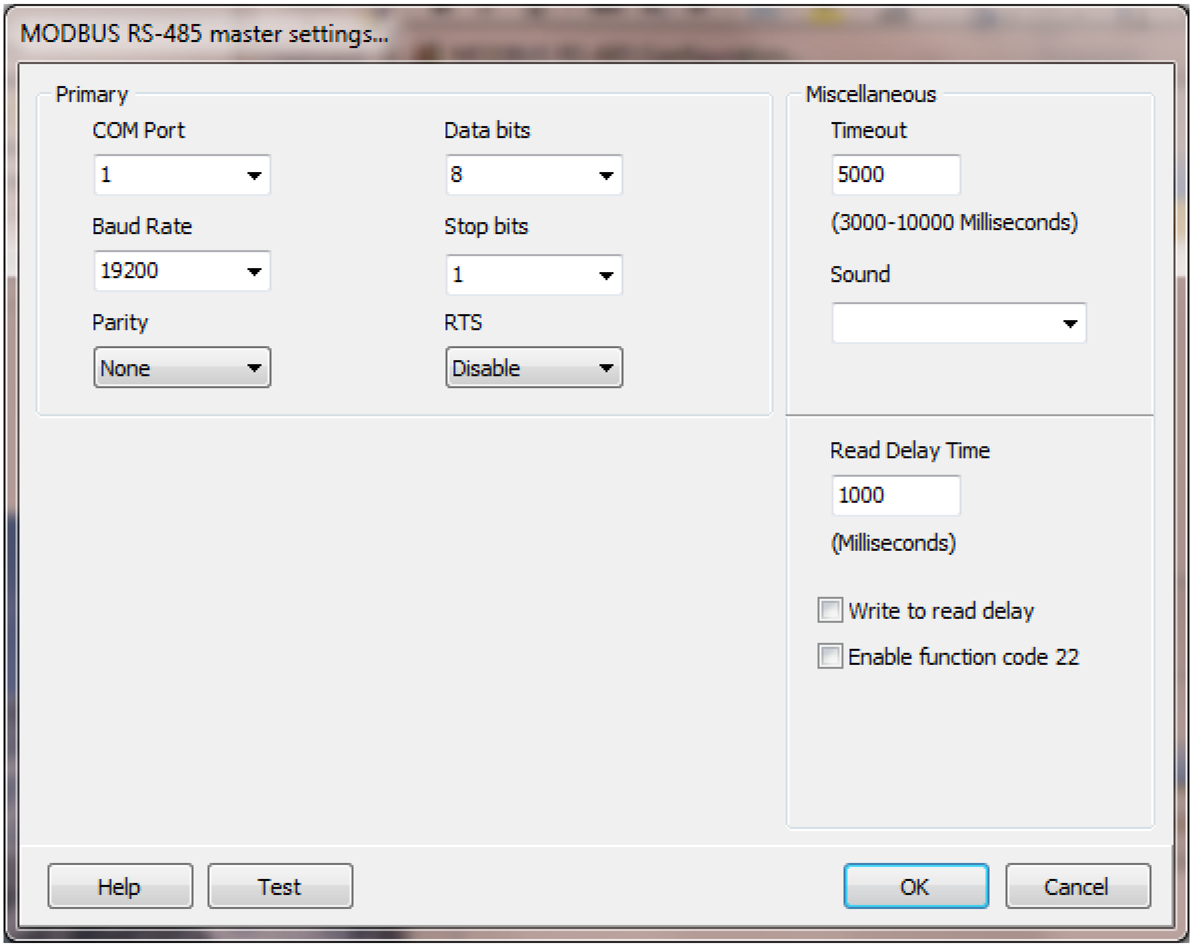
Each MODBUS RS-485 master object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS RS-485 master object select the "Delete" button.

Settings



MODBUS RS-485 master settings...

Primary

COM Port: 1

Data bits: 8

Baud Rate: 19200

Stop bits: 1

Parity: None

RTS: Disable

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 1000

(Milliseconds)

☐ Write to read delay

☐ Enable function code 22

Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data was received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

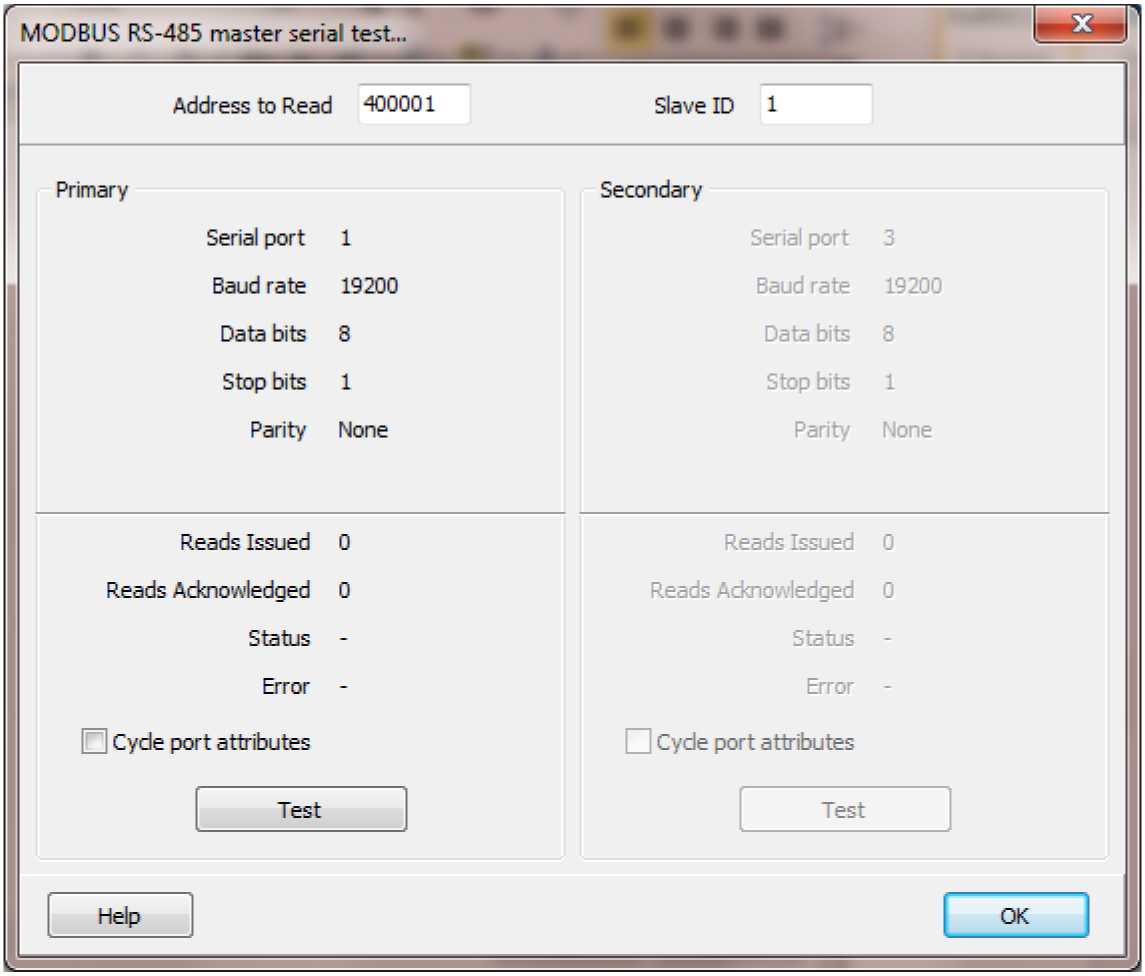
Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Enable function code 22

When enabled and a bit write to a holding register is requested, function code 22 (Mask write 4X register) will be used to set or clear the bit. If not enabled, function code 6 (Preset single register) will be used. Note: Not all devices support function code 22.

Test button



MODBUS RS-485 master serial test...

Address to Read 400001

Slave ID 1

Primary		Secondary	
Serial port	1	Serial port	3
Baud rate	19200	Baud rate	19200
Data bits	8	Data bits	8
Stop bits	1	Stop bits	1
Parity	None	Parity	None
Reads Issued	0	Reads Issued	0
Reads Acknowledged	0	Reads Acknowledged	0
Status	-	Status	-
Error	-	Error	-

☐ Cycle port attributes

☐ Cycle port attributes

When the test button is selected the program will attempt to read one word of data from the device at the address entered. If the address is a coil (0XXXXX) or an input (1XXXXX), an attempt to read 16 elements (one word) is performed.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

If an input or coil address is entered the program will attempt to read that address plus the following 15 to populate one word of data.

MODBUS RS-485 Slaves

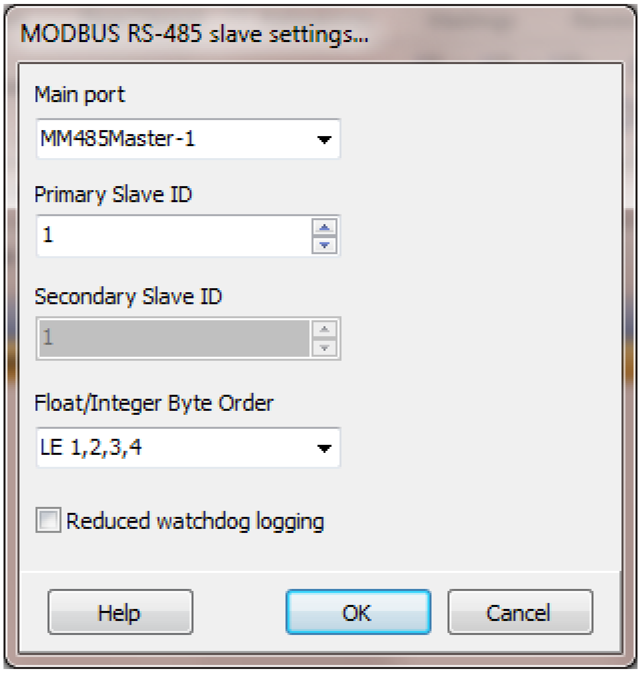
Each MODBUS RS-485 slave object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek slave objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS RS-485 slave object select the "Delete" button.

Settings



MODBUS RS-485 slave settings...

Main port: MM485Master-1

Primary Slave ID: 1

Secondary Slave ID: 1

Float/Integer Byte Order: LE 1,2,3,4

☐ Reduced watchdog logging

Main port

This is the master RS-485 port the slave is linked to. A port must be linked to a master for runtime operations.

Primary station number
Secondary station number (Future)

This is the station number of the slave device for the primary and secondary. (1 - 255)

Float/Integer Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The MODBUS holding register data received from the slave device is in HI-LO byte order.

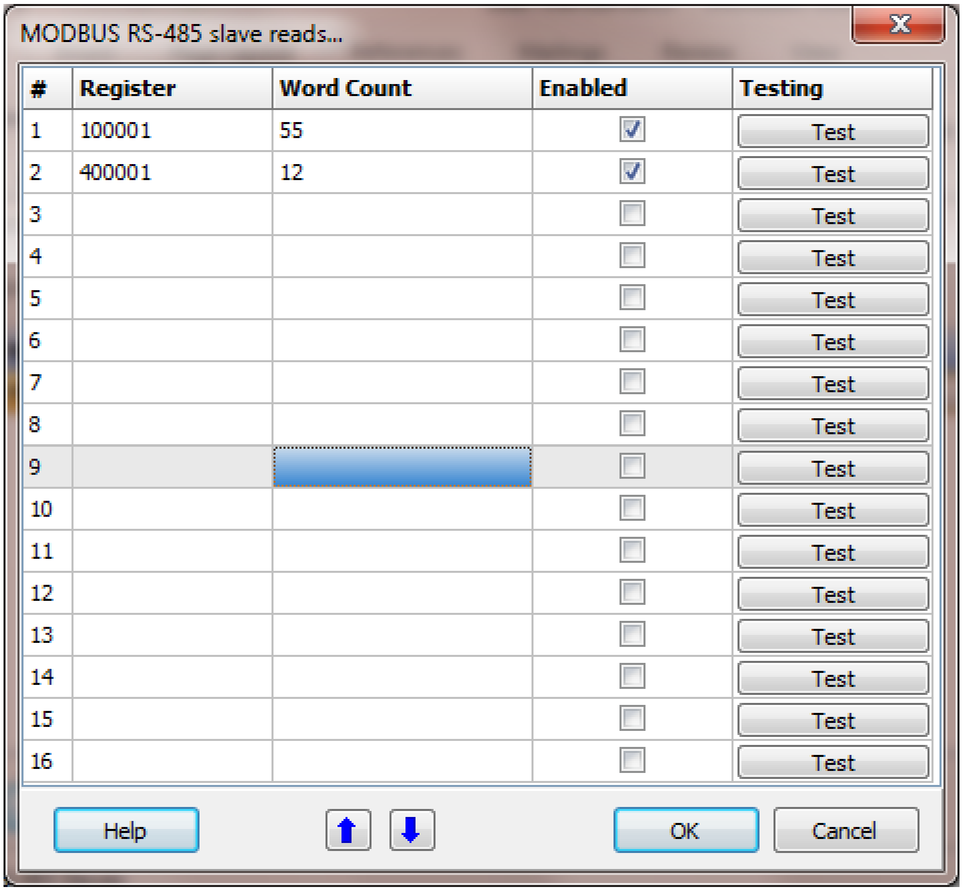
The data bytes are swapped and the result is stored in native format (LO-HI). Regular integer data and floating data values can be in the same data read.

The 4 byte float option is configured on a point level. The integer data is converted into a floating point value at the point level. Because the data bytes have already been swapped the conversion to a floating point value uses method index 3. If the byte swap had not been done at the table read level method index 4 would be the default.
When using floating point values the byte order of the slave device might be different than the regular holding register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Reduced watchdog logging

When enabled and a watchdog timeout occurs, a single entry will be placed in the event log and the sound will be queued (if configured). When the slave device responds, after a watchdog timeout, a single entry will be placed in the event log. The watchdog counter will continue to count each time the watchdog timer expires.

Reads



#	Register	Word Count	Enabled	Testing
1	100001	55	☑	Test
2	400001	12	☑	Test
3			☐	Test
4			☐	Test
5			☐	Test
6			☐	Test
7			☐	Test
8			☐	Test
9			☐	Test
10			☐	Test
11			☐	Test
12			☐	Test
13			☐	Test
14			☐	Test
15			☐	Test
16			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the 6 digit MODBUS register address numbering system.

Register

The address must be a valid MOBUS address and not refer to a bit in a holding or input register.

Any of the following addresses are valid:
000001 - 065535
100001 - 165535
300001 - 365535
400001 - 465535

Invalid address would be any that refer to a bit in a word

All of the following addresses are invalid for configuration of the reads. (All are legal for point source addressing.)

400001/01 or 300001/01

Word Count

Each read can request up to 125 words of data. For input and holding registers that would be 125 registers.

For coils and inputs that would be 125 * 16 (2000) single bits of data.

For example:

Register	Count	Result
400001	1	1 Holding Register
303521	4	4 Input Registers
100001	1	16 Inputs
000001	2	32 Coils
000016	125	2000 Coils

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Error messages

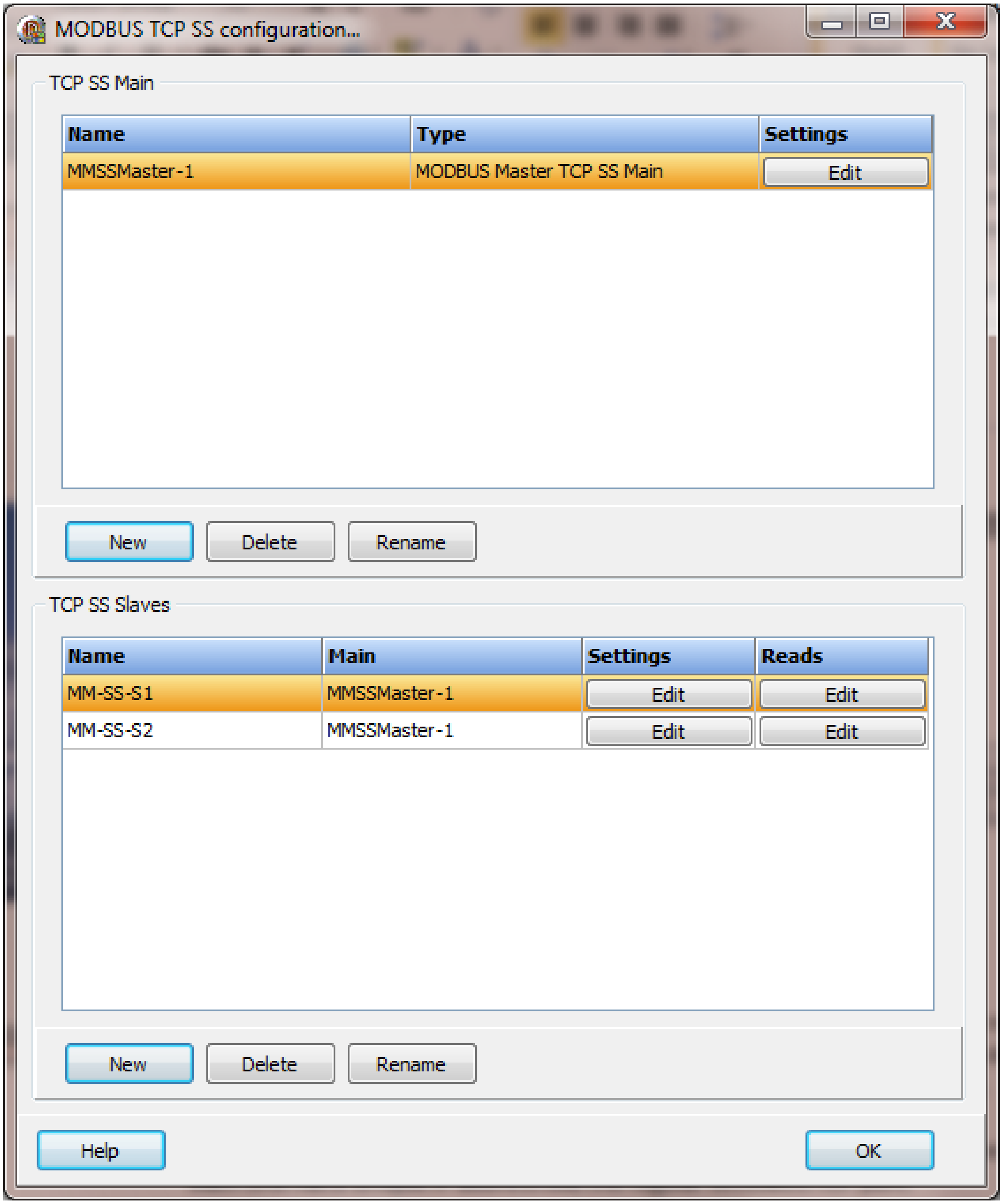
No register address	The value in the field is not a MODBUS address.
Invalid count	The count must be between 1 and 125.
Exceeds 65535	The register plus the count exceeds the maximum address range.
Invalid MODBUS address	The value in the field is an invalid MODBUS address.
Bit field not allowed	The value in the field references a bit of a register.

MODBUS MASTERS TCP (SINGLE SOCKET)

This port type should be used when a single socket is needed to access 2 or more slaves on the same IP address. It is slower in data collection because it accesses the slave devices one at a time reading the data reads configured and moving to the next configured slave.

The other MODBUS TCP port type accesses only one slave device. If you have 2 or more slaves and each one has a unique IP address use the regular MODBUS TCP port.

Each MODBUS TCP SS master object controls one port and can have one or many slave objects. The slaves are configured to address one device.


MODBUS TCP SS configuration...
TCP SS Main
New
Delete
Rename
TCP SS Slaves
New
Delete
Rename
Help
OK

Name	Type	Settings
MMSSMaster-1	MODBUS Master TCP SS Main	Edit

Name	Main	Settings	Reads
MM-SS-S1	MMSSMaster-1	Edit	Edit
MM-SS-S2	MMSSMaster-1	Edit	Edit

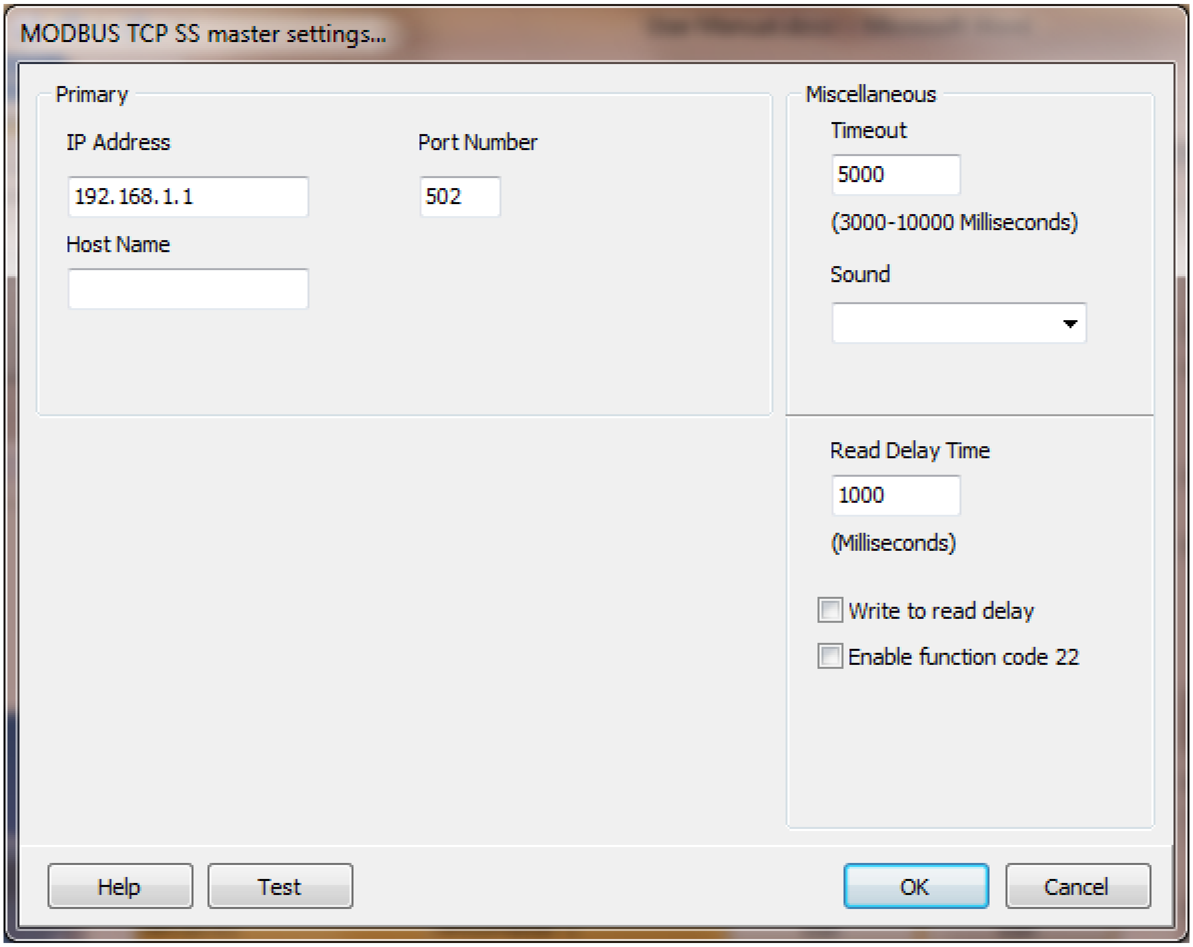
Each MODBUS TCP SS master object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible MODBUS master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS TCP SS master object select the "Delete" button.

Settings



MODBUS TCP SS master settings...

Primary

IP Address: 192.168.1.1

Port Number: 502

Host Name:

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 1000

(Milliseconds)

☐ Write to read delay

☐ Enable function code 22

If a host name is supplied the IP address is ignored.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sounds delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

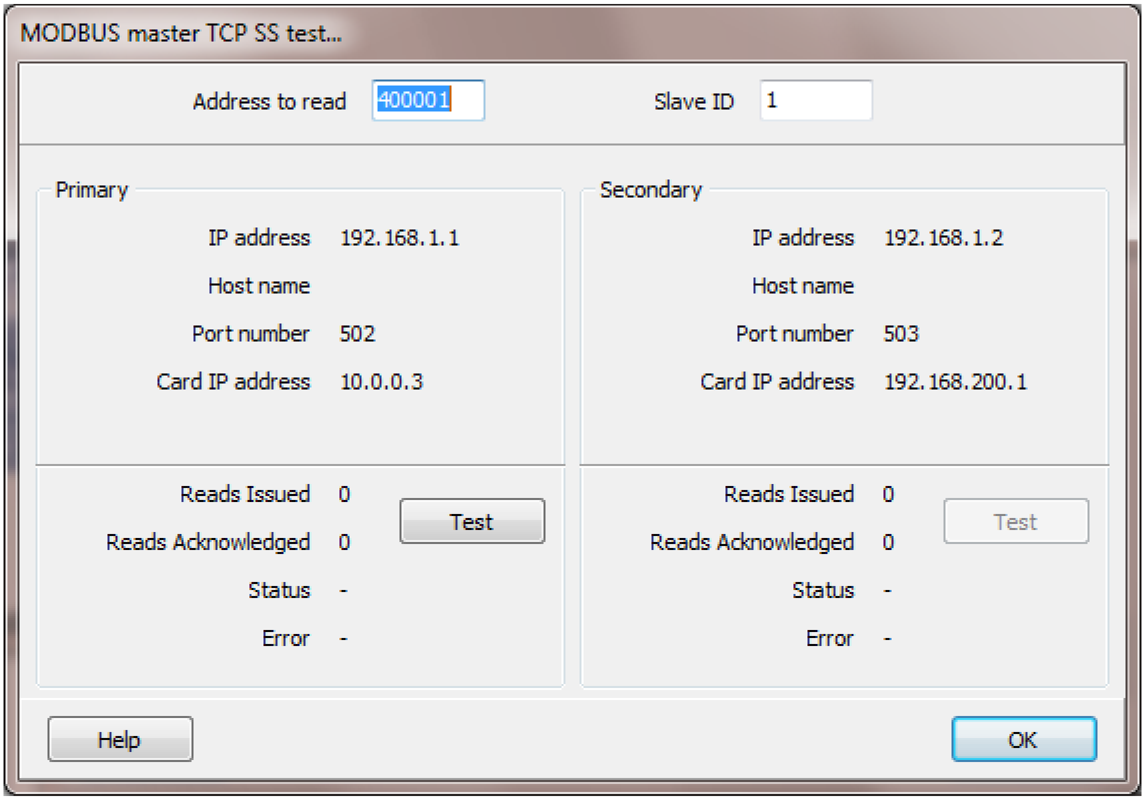
Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Enable function code 22

When enabled and a bit write to a holding register is requested, function code 22 (Mask write 4X register) will be used to set or clear the bit. If not enabled, function code 6 (Preset single register) will be used. Note: Not all devices support function code 22.

Test button



Address to read 400001

Slave ID 1

Primary

IP address 192.168.1.1

Host name

Port number 502

Card IP address 10.0.0.3

Reads Issued 0

Reads Acknowledged 0

Status -

Error -

Secondary

IP address 192.168.1.2

Host name

Port number 503

Card IP address 192.168.200.1

Reads Issued 0

Reads Acknowledged 0

Status -

Error -

When the test button is selected the program will attempt to read one word of data from the device at the address entered. If the address is a coil (0XXXXX) or an input (1XXXXX), an attempt to read 16 elements (one word) is performed.

If the connection is the primary it will bind the socket to the first NIC detected.

If the connection is the secondary it will bind the socket to the second NIC if detected. If a second NIC is not installed it will bind the socket to the first NIC detected.
If a "host name" is entered the IP address is ignored.

Note: By design the primary port will attempt to use the first device in the network configuration list and the secondary connection, if enabled, will attempt to use the second device in the network configuration list. Change the list order as desired to get the connection path desired.

If this is not possible or allowing the OS to automatically define the path is desired contact technical support for directions to disable network port binding.

MODBUS TCP SS Slaves

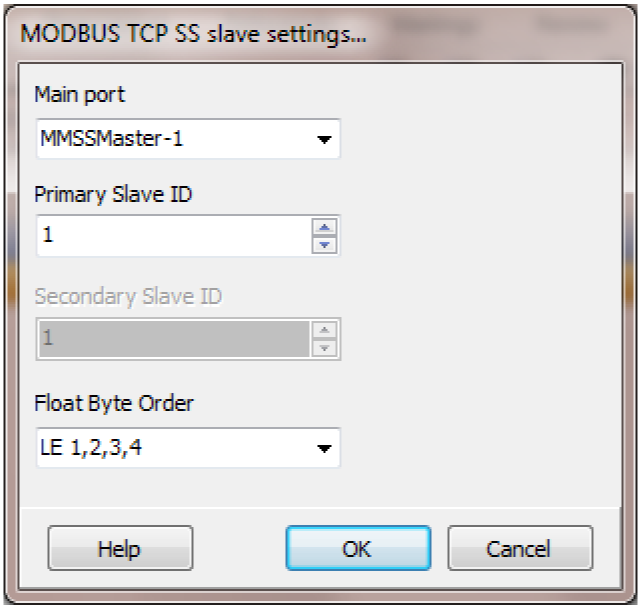
Each MODBUS TCP SS slave object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek slave objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS TCP SS slave object select the "Delete" button.

Settings


MODBUS TCP SS slave settings...

Main port: MMSSMaster-1

Primary Slave ID: 1

Secondary Slave ID: 1

Float Byte Order: LE 1,2,3,4

Main port

This is the master TCP SS port the slave is linked to. A port must be linked to a master for runtime operations.

Primary station number
Secondary station number (Future)

This is the station number of the slave device for the primary and secondary. (1 - 255)

Float/Integer Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

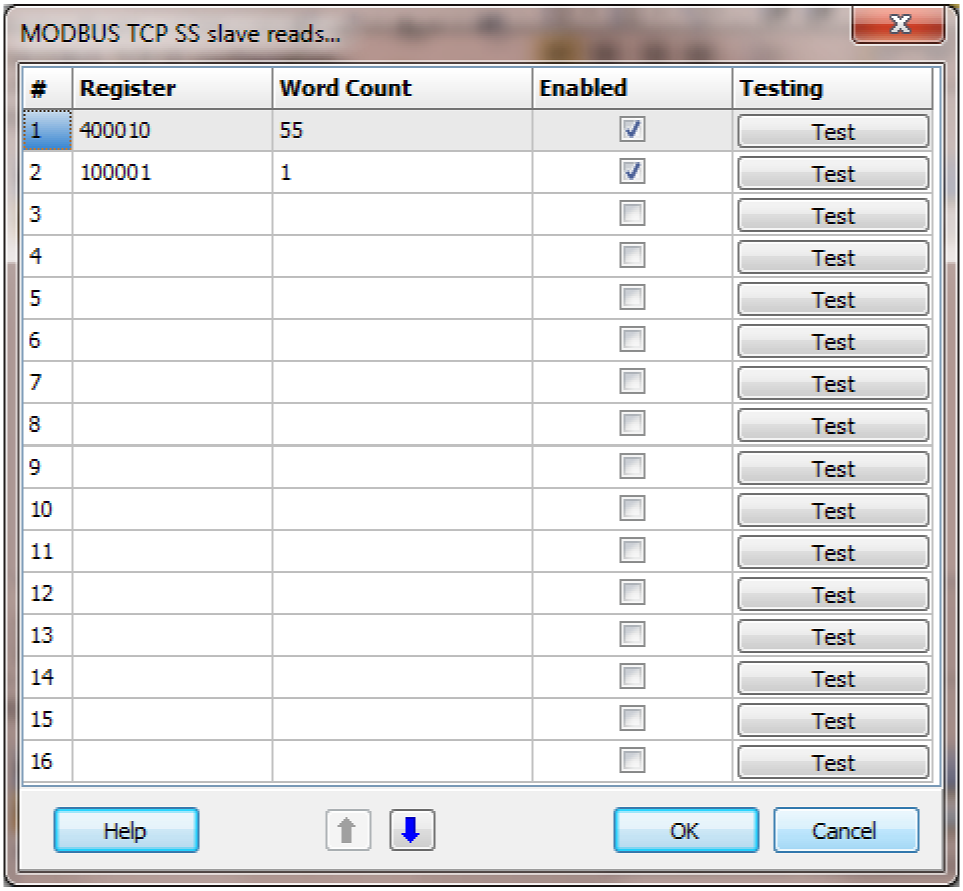
The MODBUS holding register data received from the slave device is in HI-LO byte order.

The data bytes are swapped and the result is stored in native format (LO-HI). Regular integer data and floating data values can be in the same data read.

The 4 byte float option is configured on a point level. The integer data is converted into a floating point value at the point level. Because the data bytes have already been swapped the conversion to a floating point value uses method index 3. If the byte swap had not been done at the table read level method index 4 would be the default.

When using floating point values the byte order of the slave device might be different than the regular holding register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Reads



#	Register	Word Count	Enabled	Testing
1	400010	55	☑	Test
2	100001	1	☑	Test
3			☐	Test
4			☐	Test
5			☐	Test
6			☐	Test
7			☐	Test
8			☐	Test
9			☐	Test
10			☐	Test
11			☐	Test
12			☐	Test
13			☐	Test
14			☐	Test
15			☐	Test
16			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the 6 digit MODBUS register address numbering system.

Register

The address must be a valid MOBUS address and not refer to a bit in a holding or input register.

Any of the following addresses are valid:
000001 - 065535
100001 - 165535
300001 - 365535
400001 - 465535

Invalid address would be any that refer to a bit in a word

All of the following addresses are invalid for configuration of the reads. (All are legal for point source addressing.)

400001/01 or 300001/01

Word Count

Each read can request up to 125 words of data. For input and holding registers that would be 125 registers.

For coils and inputs that would be 125 * 16 (2000) single bits of data.

For example:

Register	**Count**	**Result**
400001	1	1 Holding Register
303521	4	4 Input Registers
100001	1	16 Inputs
000001	2	32 Coils
000016	125	2000 Coils

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

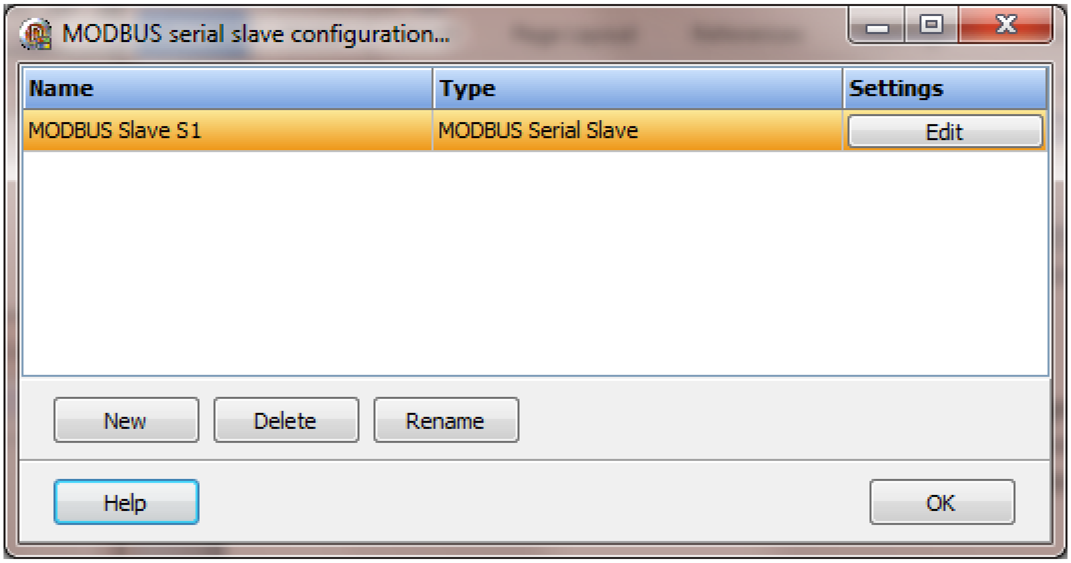
When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Error messages

No register address	The value in the field is not a MODBUS address.
Invalid count	The count must be between 1 and 125.
Exceeds 65535	The register plus the count exceeds the maximum address range.
Invalid MODBUS address	The value in the field is an invalid MODBUS address.
Bit field not allowed	The value in the field references a bit of a register.

MODBUS SLAVE SERIAL

Each MODBUS slave object is listed in the window.



Name	Type	Settings
MODBUS Slave S1	MODBUS Serial Slave	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible MODBUS master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS slave object select the "Delete" button.

The following registers are supported.

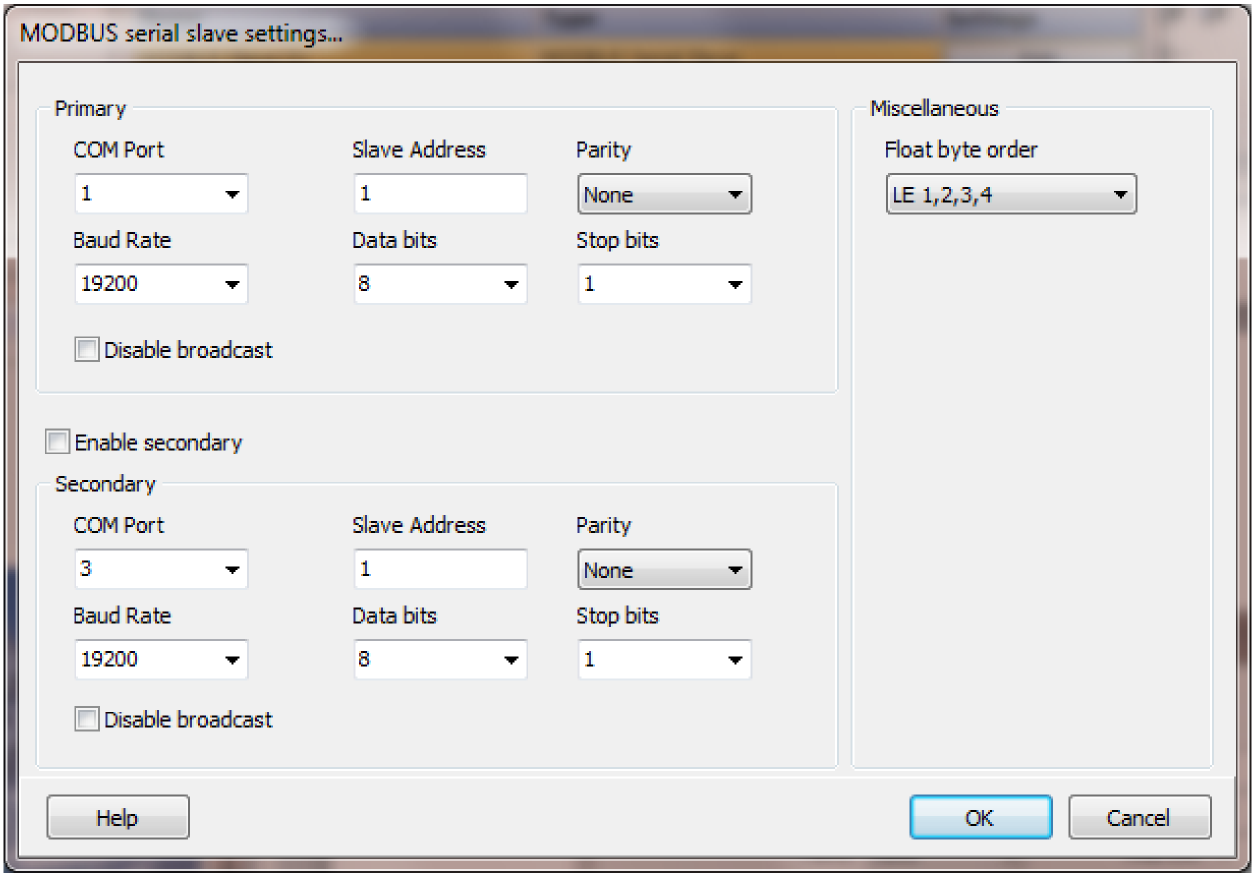
000001-065535 Coil
100001-165535 Input
300001-365535 Input Register
400001-465535 Holding Register

Function Codes

The following function codes are supported.

01: Read coil status
02: Read input status
03: Read holding register
04: Read input registers
05: Force single coil
06: Preset single register
15: Force multiple coils
16: Preset multiple registers

Settings



MODBUS serial slave settings...

Primary

COM Port: 1
Slave Address: 1
Parity: None
Baud Rate: 19200
Data bits: 8
Stop bits: 1
☐ Disable broadcast

☐ Enable secondary

Secondary

COM Port: 3
Slave Address: 1
Parity: None
Baud Rate: 19200
Data bits: 8
Stop bits: 1
☐ Disable broadcast

Miscellaneous

Float byte order: LE 1,2,3,4

The serial port has a primary port and if enabled a secondary port. Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Slave address

This is the MODBUS slave address of this program. This program only accepts message with a slave address that equals this setting or is 0 (broadcast). The address range is 1-255. Default is 1.

Disable broadcast

If this attribute is set the slave will not accept broadcast messages.

Enable secondary

The "Enable Secondary" checkbox provides for a second com port to be used. When in run mode both ports would be active.

Float/Integer Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

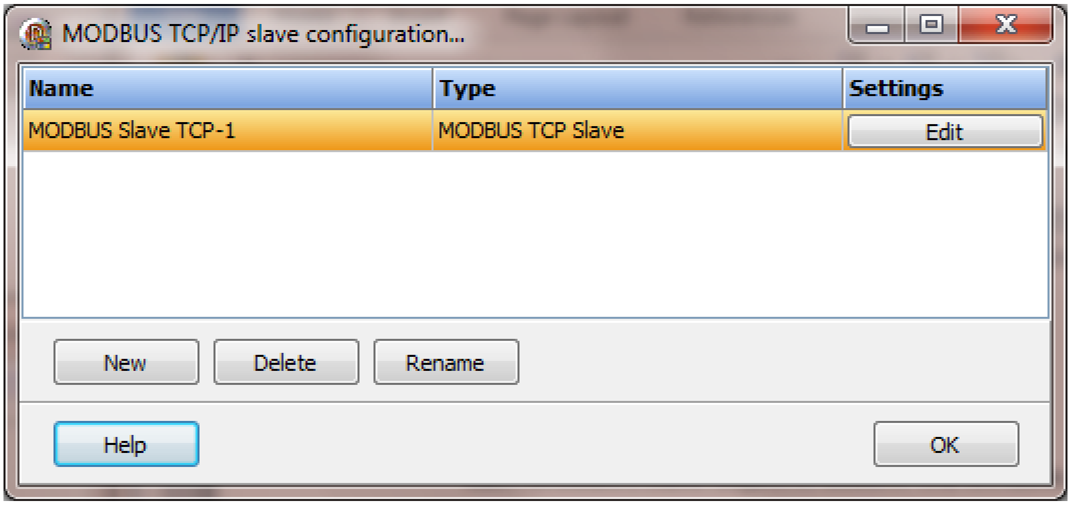
The MODBUS holding register data received from the slave device is in HI-LO byte order.

The data bytes are swapped and the result is stored in native format (LO-HI). Regular integer data and floating data values can be in the same data read.

The 4 byte float option is configured on a point level. The integer data is converted into a floating point value at the point level. Because the data bytes have already been swapped the conversion to a floating point value uses method index 3. If the byte swap had not been done at the table read level method index 4 would be the default.

MODBUS SLAVE TCP/IP

Each MODBUS slave object is listed in the window.



Name	Type	Settings
MODBUS Slave TCP-1	MODBUS TCP Slave	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible MODBUS master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a MODBUS slave object select the "Delete" button.

The following registers are supported.

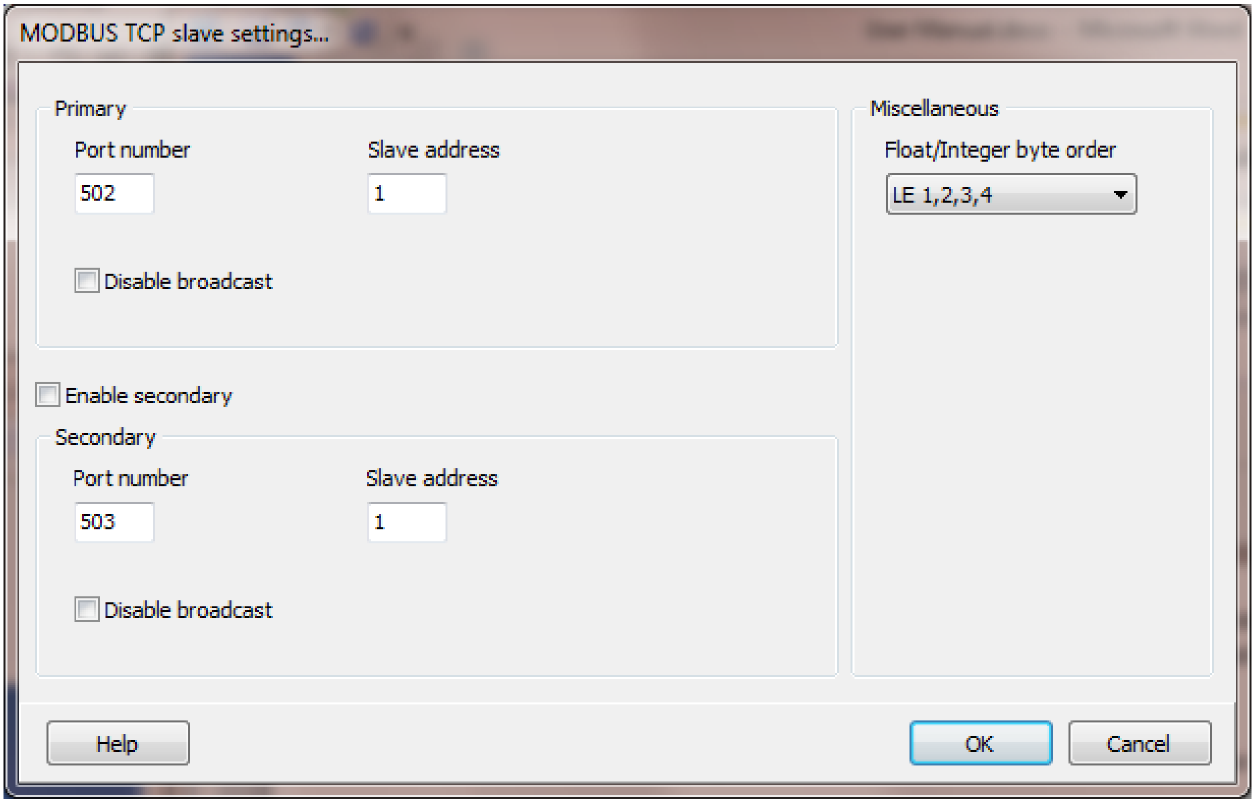
000001-065535 Coil
100001-165535 Input
300001-365535 Input Register
400001-465535 Holding Register

Function Codes

The following function codes are supported.

01: Read coil status
02: Read input status
03: Read holding register
04: Read input registers
05: Force single coil
06: Preset single register
15: Force multiple coils
16: Preset multiple registers

Settings


MODBUS TCP slave settings...

Primary

Port number: 502

Slave address: 1

☐ Disable broadcast

☐ Enable secondary

Secondary

Port number: 503

Slave address: 1

☐ Disable broadcast

Miscellaneous

Float/Integer byte order: LE 1,2,3,4

Port number

The TCP/IP port number of the slave device.

Slave address

This is the MODBUS slave address of this program. This program only accepts message with a slave address that equals this setting or is 0 (broadcast). The address range is 1-255. Default is 1.

Disable broadcast

If this attribute is set the slave will not accept broadcast messages.

Enable secondary

The "Enable Secondary" checkbox provides for a second com port to be used. When in run mode both ports would be active.

Float/Integer Byte Order

Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The MODBUS holding register data received from the slave device is in HI-LO byte order.

The data bytes are swapped and the result is stored in native format (LO-HI). Regular integer data and floating data values can be in the same data read.

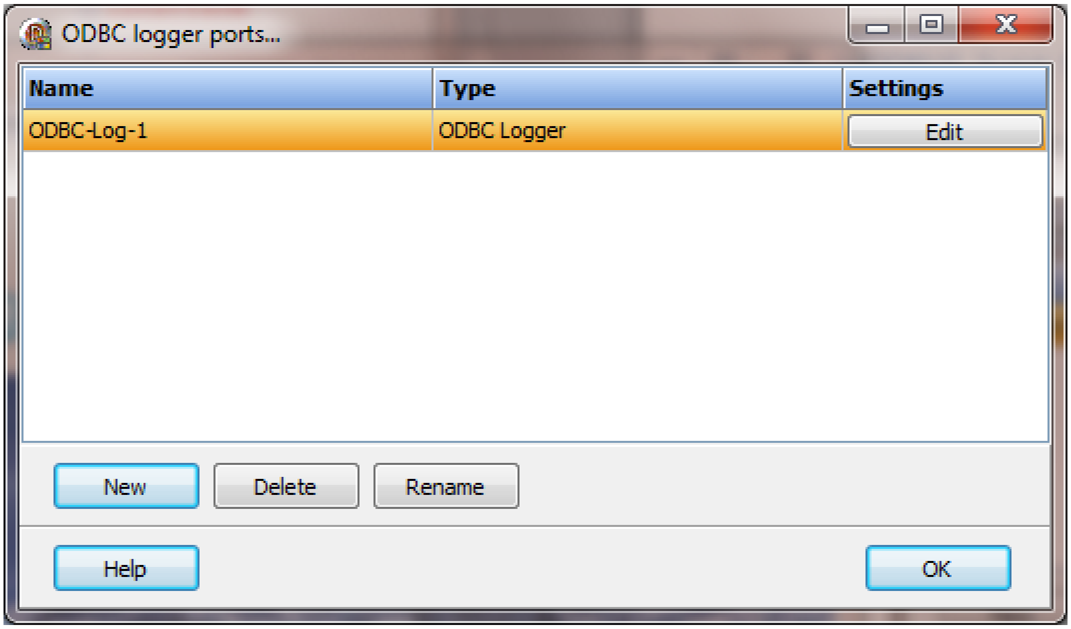
The 4 byte float option is configured on a point level. The integer data is converted into a floating point value at the point level. Because the data bytes have already been swapped the conversion to a floating point value uses method index 3. If the byte swap had not been done at the table read level method index 4 would be the default.

ODBC DATA LOGGER

Note: It is suggested that all the fields in the database be set to 'Text'.

ODBC (Open Database Connectivity) provides a method to connect with many different databases via one interface type.

Each ODBC logger object is listed in the window.



Name	Type	Settings
ODBC-Log-1	ODBC Logger	Edit

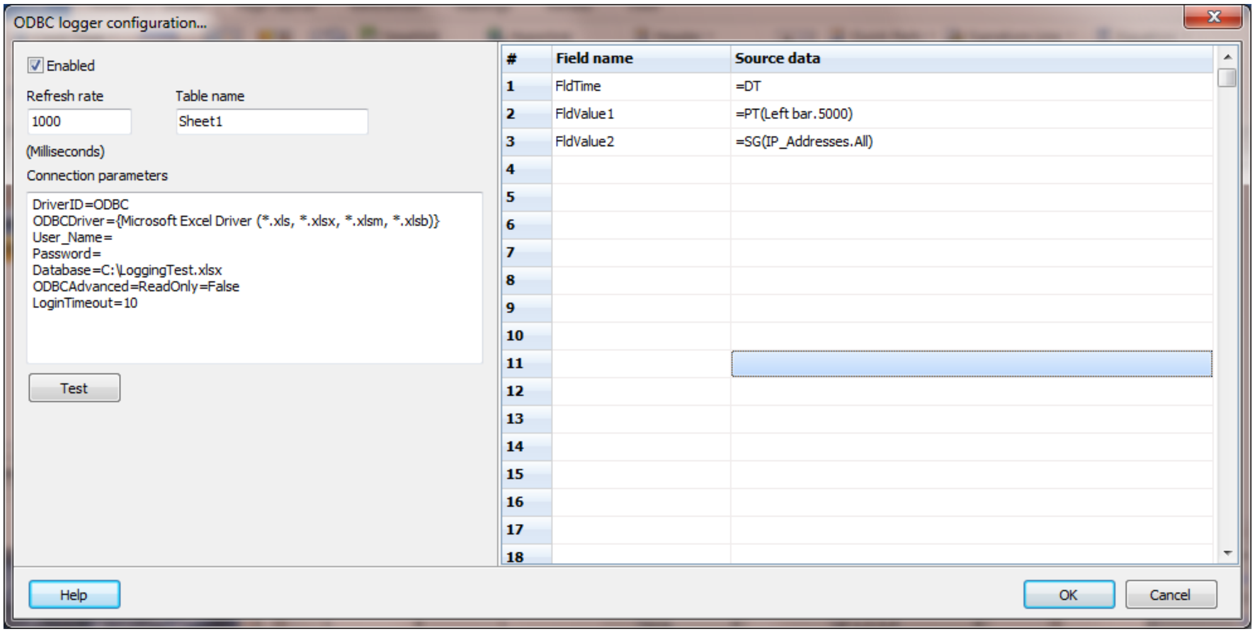
To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible MODBUS master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a ODBC logger object select the "Delete" button.

A single connection is used to log the data to the file/database. Each new record is added to the end of the table at the configured refresh rate. If the refresh rate is zero (0), records are added via scripting or mouse commands.

Settings



☑ Enabled

Refresh rate: 1000 (Milliseconds)

Table name: Sheet1

Connection parameters

```
DriverID=ODBC
ODBCDriver={Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb)}
User_Name=
Password=
Database=C:\LoggingTest.xlsx
ODBCAdvanced=ReadOnly=False
LoginTimeout=10
```

#	Field name	Source data
1	FldTime	=DT
2	FldValue1	=PT(Left bar.5000)
3	FldValue2	=SG(IP_Addresses.All)
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		

The database must exist prior to access. The format of the database is unknown so the program cannot create the database. This feature logs a new row/record to the database on each command, via user control or at a timed rate. The number of fields(columns) per row/record is 64.

Enabled

If enabled, at runtime startup a connection will be made to the database.

Refresh rate

If the refresh rate is 0 (zero) a record will only be inserted via a script command or mouse command. If the refresh rate is 100 milliseconds or greater a record will be inserted at the configured refresh rate.

Table name

The name of the table in the database. For Excel this is the sheet name.

Connection parameters

Refer to the section below.

Field name

The name of the field to place the source data. For Excel this is the text in the first row of each column.

The column/field names cannot be any word reserved by the database. (e.g. Date, Time, Add, Counter)

Source data

This is the source for the data to insert into the database. The format is the same used for reports.

Right click the mouse in a cell and select a menu item to display the cell formatter dialog. Or type in the correct configuration.

Prefix	**Operation**
PT	Collects the value of a point.item
SG	Collects the value of a script global
DT	Date time display

Points

The value of the point.item will be placed in the cell.
=PT(Tank.Process Variable Analog)

The value of the point.item will be placed in the cell with 3 decimal places. The default is 2 and does not need to be present.
=PT(Tank.Process Variable Analog~D3)

The value of the point.item will be placed in the cell using the supplied strings. The default is True/False and does not need to be present.
=PT(Tank.Process Variable Digital~TOpen~FClosed)

Script globals

The value of the script global will be placed in the cell. (Section.item)
=SG(Logged on.User)

The value of the script global will be placed in the cell and limited to the first ten characters. Default is all characters and does not need to be present.
=SG(Logged on.User~L10)

Note: If the string contains any spaces, the string must be enclosed in single quotes. Example 'some text'.

Date/Time

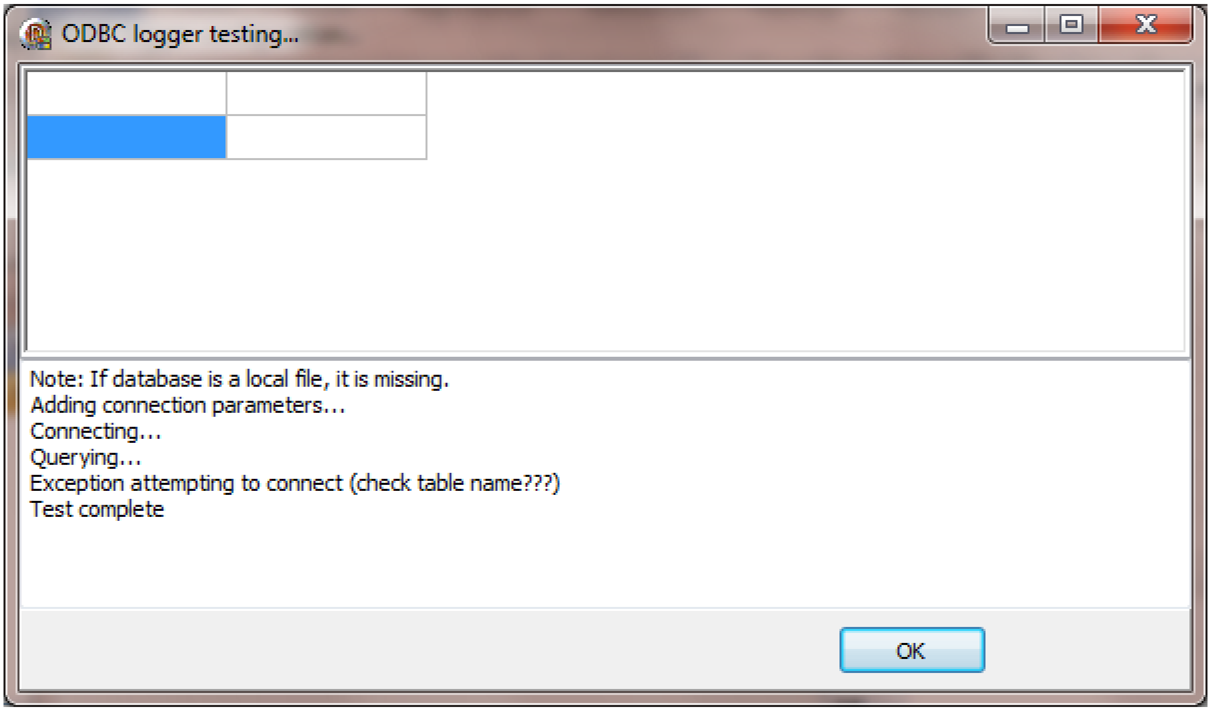
The date and/or time will be placed in the cell. This command uses the same format as the graphic engine. No format specified will use the system default.

Note: This is a 'text' field type.

=DT	// as defined by the OS
=DT(h:n:s d/m/yy)	// 13:6:36 24/5/11
=DT(mm/dd/yyyy hh:mm:ss)	// 05/24/2011 13:06:36
=DT(mm-dd-yyyy hh:mm:ss)	// 05-24-2011 13:06:36
=DT(hh:mm:ss)	// 13:06:36

Note: It is suggested you use a 24 hour clock format.

Test button



```
Note: If database is a local file, it is missing.
Adding connection parameters...
Connecting...
Querying...
Exception attempting to connect (check table name???)
Test complete
```

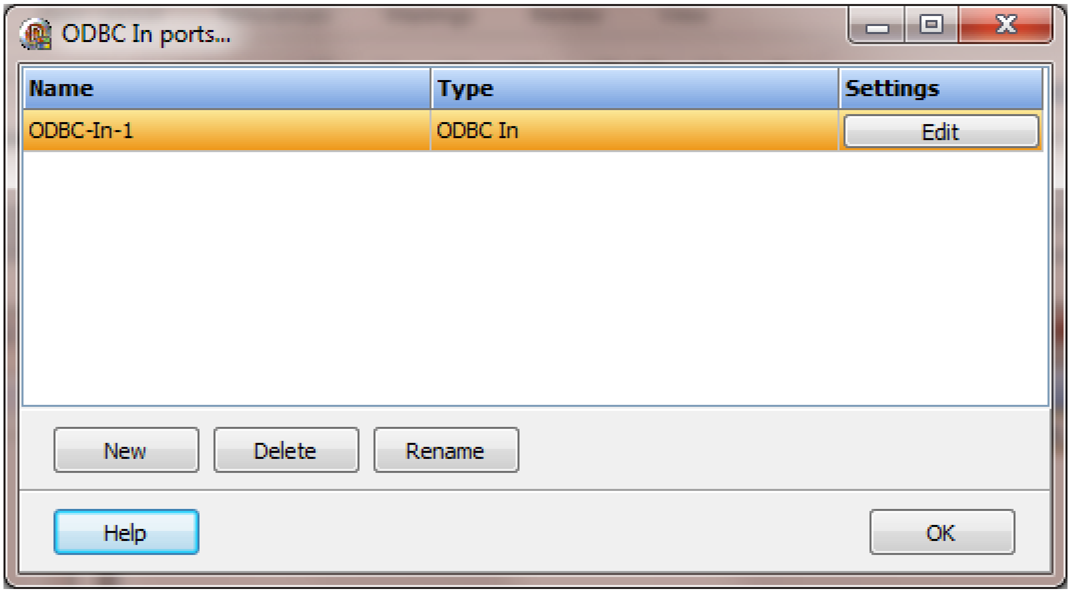
The program will attempt to connect to the database and perform a query. It will not write to the database.

ODBC IN

Note: It is suggested that all the fields in the database be set to 'Text'.

ODBC (Open Database Connectivity) provides a method to connect with many different databases via one interface type.

Each ODBC In object is listed in the window.



Name	Type	Settings
ODBC-In-1	ODBC In	Edit

The HMI divides connections to write point status (out) from connections to collect point data (in).

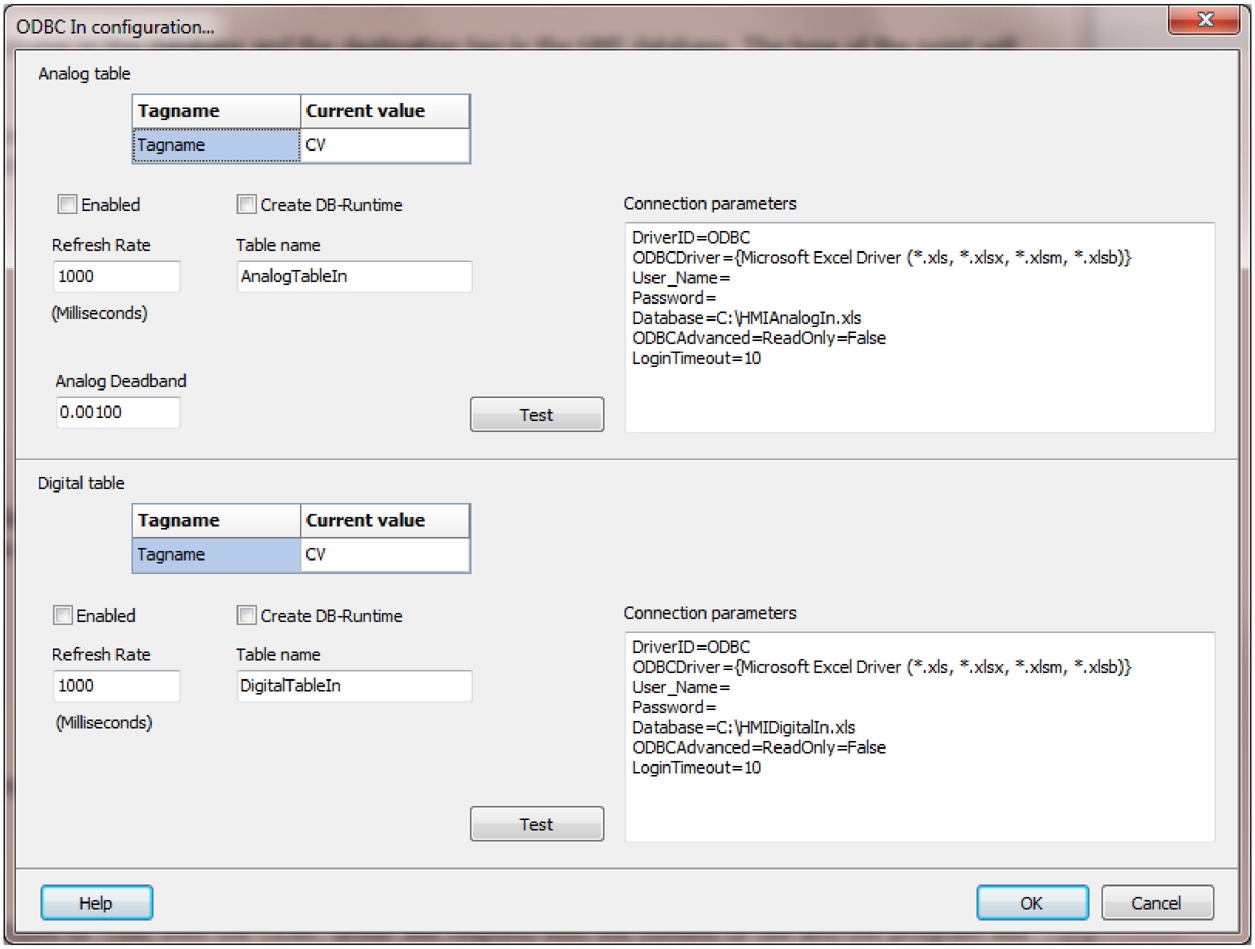
The ODBC In provides a connection to write data into analog and/or digital points.

The number of database connections is not limited. This allows for the data to be segmented. For analog and digital points only the tagname and current value are required.

Some example files/database are in the '..\Database Templates\' directory.

WARNING: Do not change the order or value of the first column in the database after runtime monitoring has started.

Settings



Analog table

Tagname	Current value
Tagname	CV

☐ Enabled
☐ Create DB-Runtime

Refresh Rate: 1000 (Milliseconds)

Table name: AnalogTableIn

Analog Deadband: 0.00100

Connection parameters

```
DriverID=ODBC
ODBCDriver={Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb)}
User_Name=
Password=
Database=C:\HMIAnalogIn.xls
ODBCAdvanced=ReadOnly=False
LoginTimeout=10
```

Digital table

Tagname	Current value
Tagname	CV

☐ Enabled
☐ Create DB-Runtime

Refresh Rate: 1000 (Milliseconds)

Table name: DigitalTableIn

Connection parameters

```
DriverID=ODBC
ODBCDriver={Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb)}
User_Name=
Password=
Database=C:\HMIDigitalIn.xls
ODBCAdvanced=ReadOnly=False
LoginTimeout=10
```

'ODBC In' is really a read/write port type. The points are defined in the 'Points Editor' and the values are collected (read) from the database. Depending on the point access rights the values may be written to the database - just like a PLC or other device that contains memory locations with data. The source address in the 'Points Editor' is used for the tagname column in the database.

Analog and Digital table

Each table has several fields. Each column must have a name and it must be unique for the table.

The column/field names cannot be any word reserved by the database. (e.g. Date, Time, Add, Counter)

Analog table

Field name	Type
Tagname	string
Current value	float

Digital table

Field name	Type
Tagname	string
Current value	Boolean

Enabled

If enabled at runtime a connection will be made to the database.

Table name

The name of the table in the database. For Excel this is the sheet name.

Create DB-Runtime

This should not be enabled. As an "in" data source the rows should be configured with the values in the fields. This is not applicable to all database types and file locations.

Excel: If enabled the database file will be deleted, if present, and a new one created with the correct column headings. Excel is not a database. It has some of the features of a database. The database file should only contain the header and table name definition. The HMI will not save any other data to the file at configuration or runtime.

For ODBC In, other programs should not modify the database or database definition.

WARNING: Excel does not allow the editing of sheets via ODBC while the file is open in Excel. The error messages returned by Excel will not indicate the correct solution - quit Excel.

Microsoft Access:
No records are deleted. The table should only contain the desired points as configured. Rows with non-configured data are, not efficient.

Analog deadband

This value is the minimum difference between the old value and current value to cause the change logic to execute.

Floating point numbers are represented in binary fractions and therefore are always an approximation of a decimal fraction.

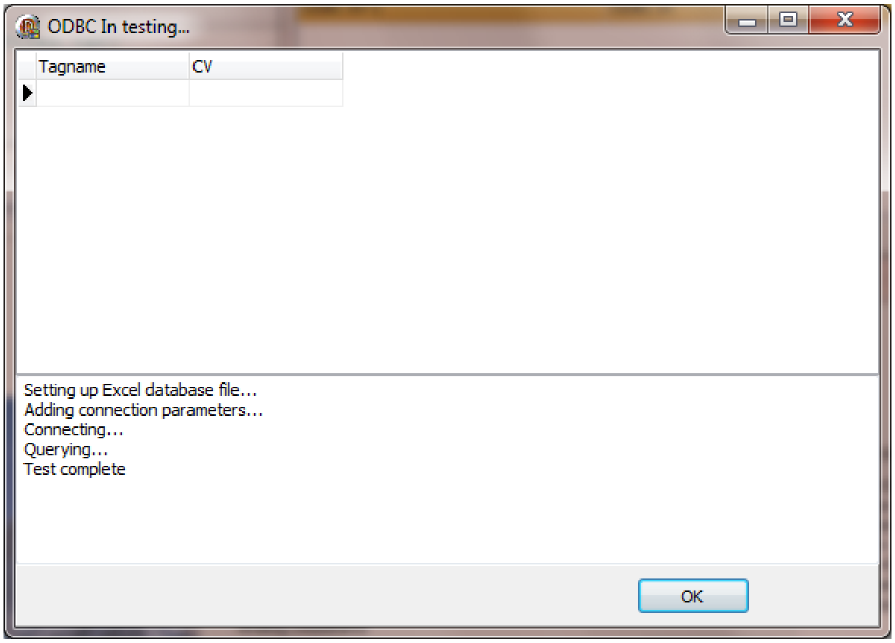
That is why occasionally you see a value like 1.9800000000000001 for something that you would expect to have only a few decimal places of precision. When comparing two floating point numbers, the comparison should be on how close they are to each other rather than testing for equality.

AD = 0.001 (default)
Change = ((a - b) >= AD)

Connection parameters

Refer to the section below.

Test



Setting up Excel database file...
Adding connection parameters...
Connecting...
Querying...
Test complete

Selecting this button will attempt to create a connection to the database, set up the table and write the configured tagnames to the database. WARNING: Verify the database file is not use before selecting the 'Test' button.

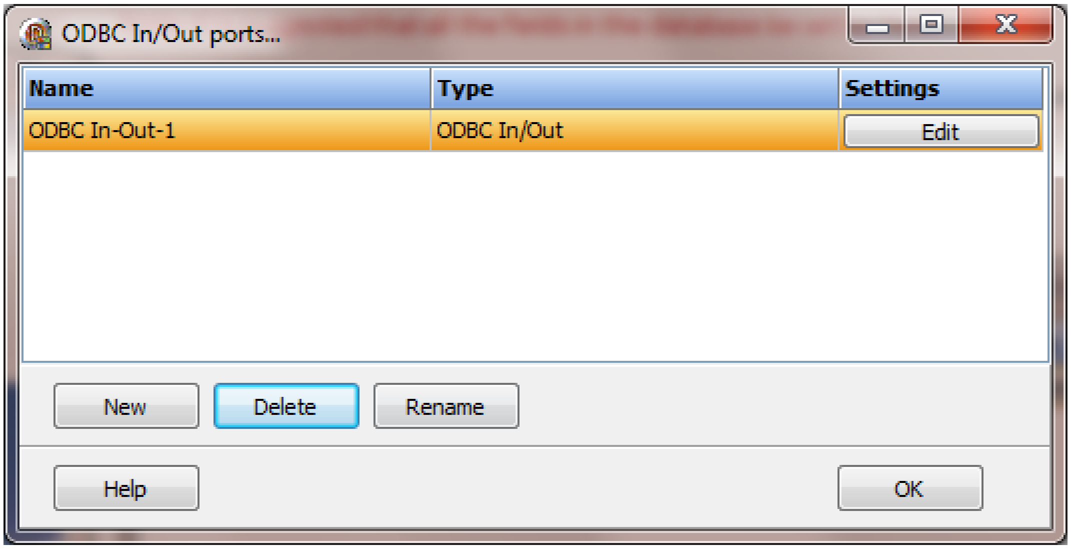
Excel: An attempt is made to delete any file with the database name and recreate the file with the correct headers.

ODBC IN/OUT

Note: It is suggested that all the fields in the database be set to 'Text'.

ODBC (Open Database Connectivity) provides a method to connect with many different databases via one interface type.

Each ODBC In/Out object is listed in the window.



Name	Type	Settings
ODBC In-Out-1	ODBC In/Out	Edit

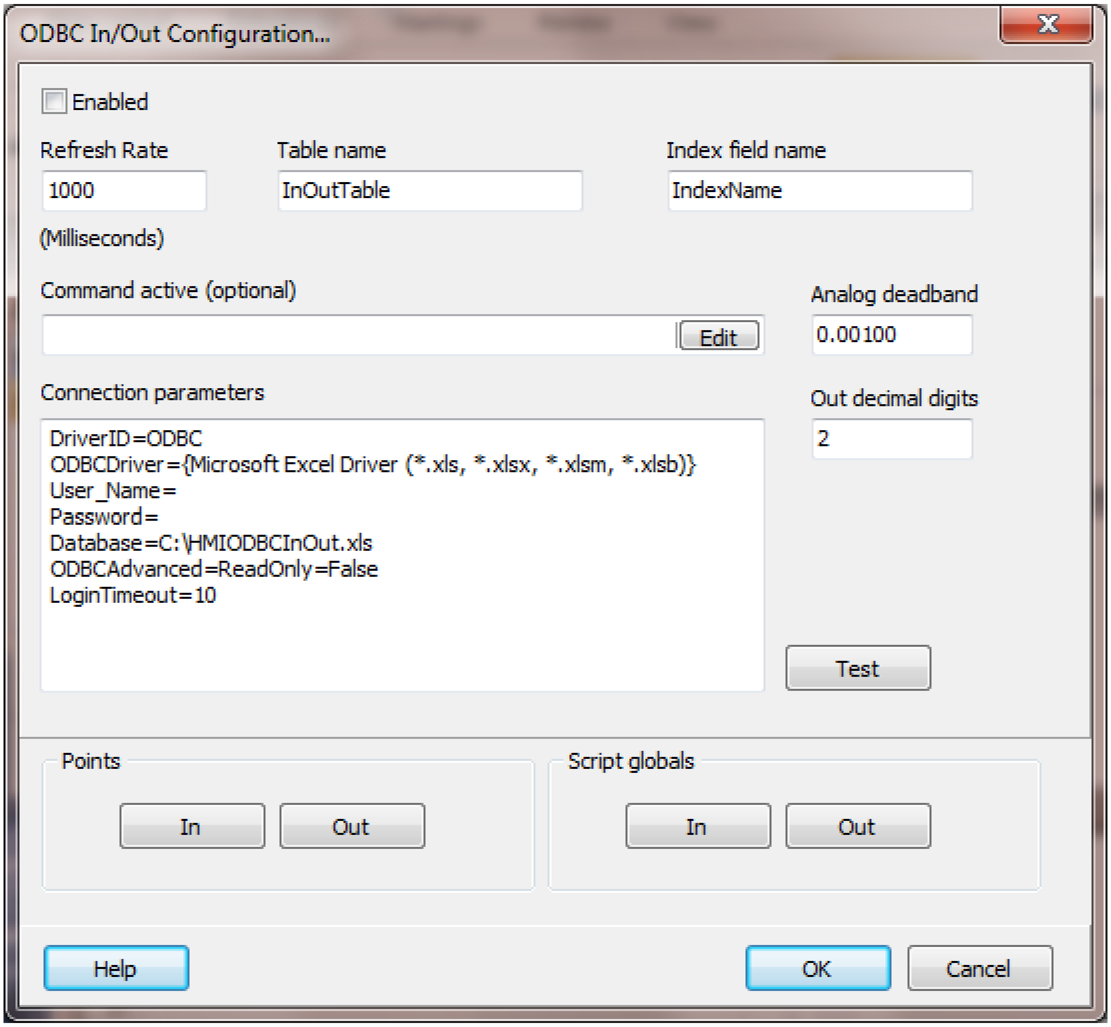
A single connection is used for access. Points are written to and read from using a single connection (file/database).

A read list is used to provide the source row and column in the database and the destination tag in the HMI database. The type of the point will determine the data type.

A write list is used to provide the destination row and column in the database and the source point.item in the HMI database. The type of the point will determine the data type written to the database. The first method writes the point data and some additional tag data. This method writes a single point.item per write.

This method can also be controlled via scripting.

Settings



☐ Enabled

Refresh Rate: 1000 (Milliseconds)

Table name: InOutTable

Index field name: IndexName

Command active (optional):

Analog deadband: 0.00100

Out decimal digits: 2

Connection parameters

```
DriverID=ODBC
ODBCDriver={Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb)}
User_Name=
Password=
Database=C:\HMIODBCInOut.xls
ODBCAdvanced=ReadOnly=False
LoginTimeout=10
```

Enabled

If enabled at runtime a connection will be made to the database.

Table name

The name of the table in the database. For Excel this is the sheet name.

Index field name

This is the name of the field (column) to search for the row name.

The program will access the row that contains the name configured in the in/out list.

Then the value will be collected from/written to the row under the column name configured in the in/out list.

The row search can be based on any field (column). Supply the name of the field (column) in this attribute.

The column/field names cannot be any word reserved by the database. (e.g. Date, Time, Add, Counter)

For Excel

1) The first row of the sheet contains the column names.
2) Row names, not row numbers are used to locate the destination cell.

For example: Row 1 could contain Unit, Pressure, Temperature. These are the column names.

Setting the 'Index field name' to 'Unit' would configure the program to search the 'Unit' column.

Column 1 (Unit) could then contain all the unit names after the first row. e.g. Crusher, Shredder, Mixer, etc.

In the In/out points the 'Row' is the name to search for in the 'Index field name'. In this example, 'Unit'.

Analog deadband

This value is the minimum difference between the old value and current value to cause the change logic to execute.

Floating point numbers are represented in binary fractions and therefore are always an approximation of a decimal fraction.

That is why occasionally you see a value like 1.9800000000000001 for something that you would expect to have only a few decimal places of precision. When comparing two floating point numbers, the comparison should be on how close they are to each other rather than testing for equality.

AD = 0.001 (default)
Change = ((a - b) >= AD)

Out decimal digits

The decimal digit count for analog out points. (0-7)

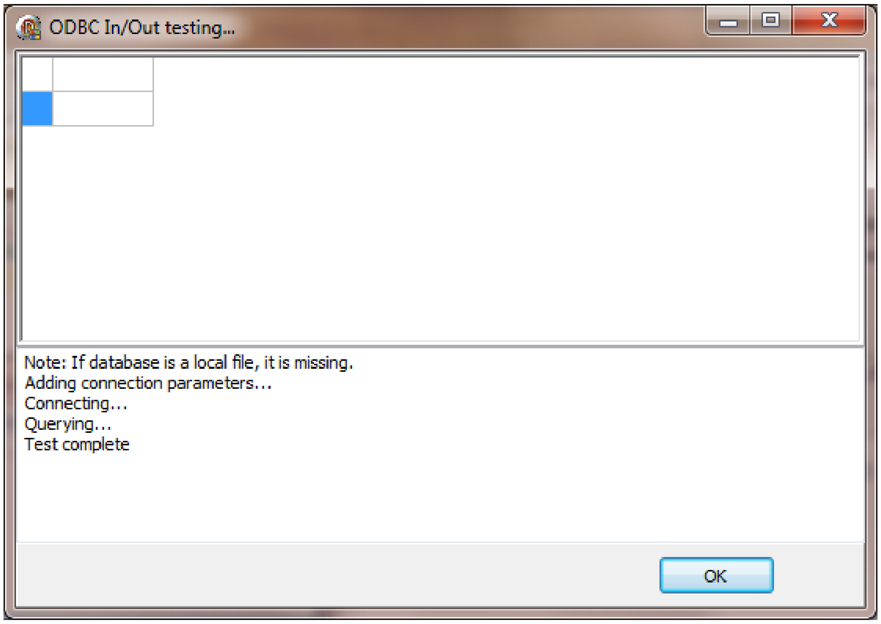
Command active (optional)

This attribute can point to a digital host point. When a command is accepted and execution has begun this point is set to true. Then the command completes the point is set to false. Note: Some commands execute very fast. The on to off period may be very short.

Connection parameters

Refer to the section below.

Test



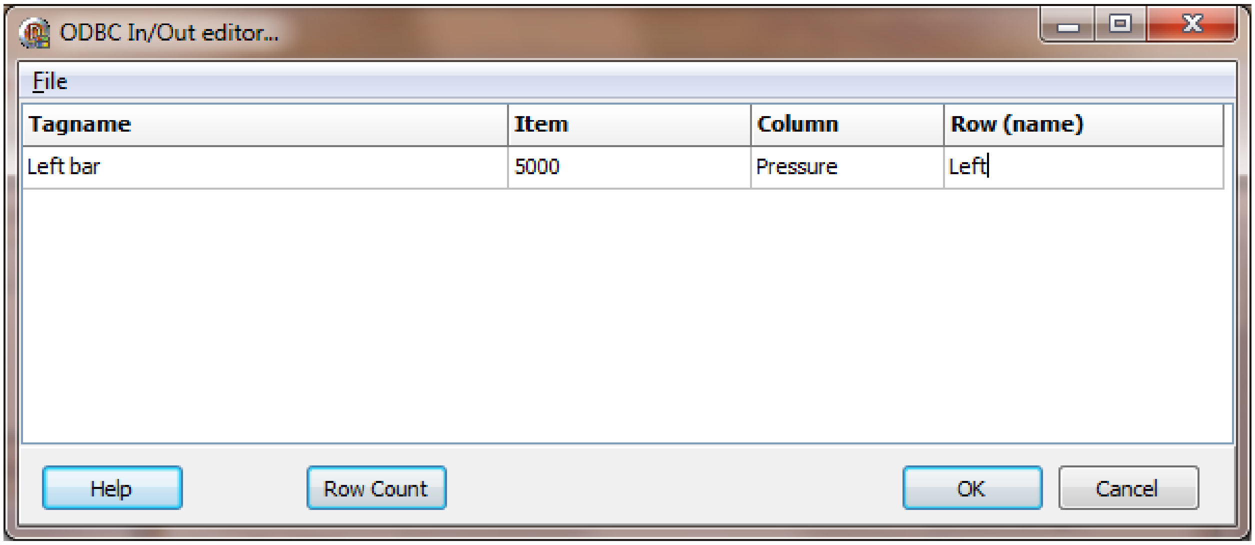
```
Note: If database is a local file, it is missing.
Adding connection parameters...
Connecting...
Querying...
Test complete
```

Selecting this button will attempt to create a connection to the database, set up the table and write the configured tagnames to the database. WARNING: Verify the database file is not use before selecting the 'Test' button.

Point/script globals In/Out

These are the list of commands to read and write to the database.

Note: For script globals, set the field type to 'text' for all the fields in the table that are referenced. Failure to do so may cause reading and/or writing to fail.



Tagname	Item	Column	Row (name)
Left bar	5000	Pressure	Left

This window allows for the editing of the in (reads) and out (writes) command list.

When importing a CSV or XLS file the first row of the data is ignored.

Selecting the button in column 1 will display the selection tool for the correct type.

For Excel
1) The first row of the sheet contains the column names.
2) Row names, not row numbers are used to locate the destination cell.

For example: Row 1 could contain Unit, Pressure, Temperature. These are the column names.

Setting the 'Index field name' to 'Unit' would configure the program to search the 'Unit' column.
Column 1 (Unit) could then contain all the unit names after the first row. e.g. Crusher, Shredder, Mixer, etc.

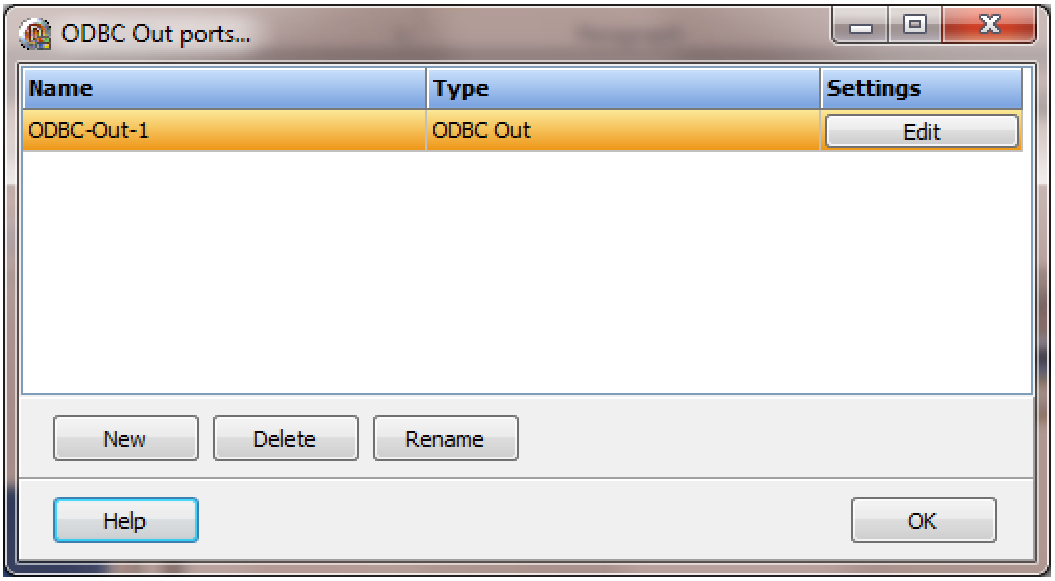
In the In/out points the 'Row' is the name to search for in the 'Index field name'. In this example, 'Unit'.

ODBC OUT

Note: It is suggested that all the fields in the database be set to 'Text'.

ODBC (Open Database Connectivity) provides a method to connect with many different databases via one interface type.

Each ODBC Out object is listed in the window.



Name	Type	Settings
ODBC-Out-1	ODBC Out	Edit

The HMI divides connections to write point status (out) from connections to collect point data (in).

The ODBC Out provides a connection to write the dynamic values of analog points to one database and digital points to a separate database. All points can be written or only selected points. The number of database connections is not limited. This allows for the data to be segmented or shared.

For analog points the current value, percent full scale and alarm points are written to the database.

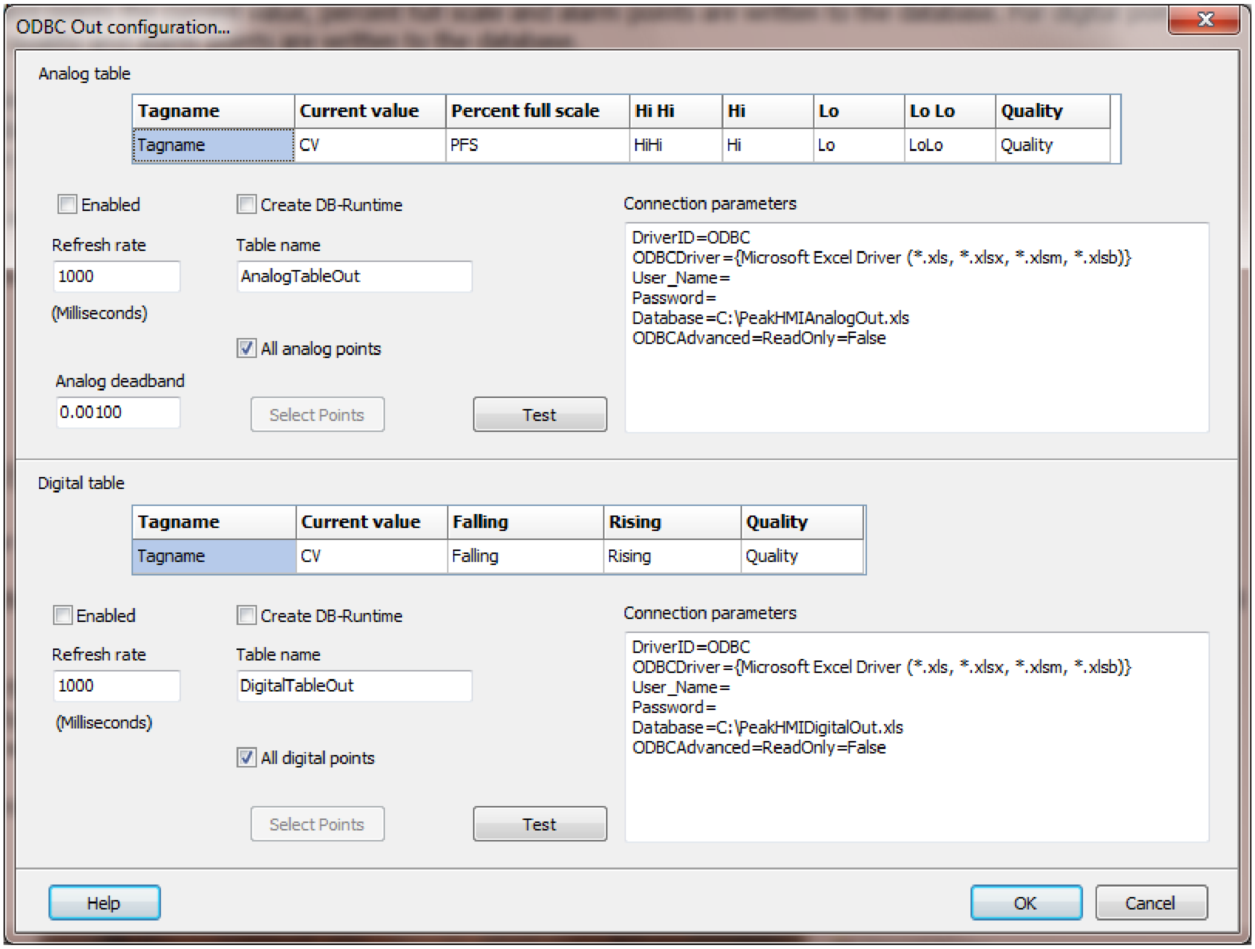
For digital points the tagname, current value, point quality and alarm points are written to the database.

The number of database connections is not limited. This allows for the data to be segmented. For analog and digital points only the tagname and current value are required.

Some example files/database are in the '..\Database Templates\' directory.

WARNING: Do not change the order or value of the first column in the database after runtime monitoring has started.

Settings



Analog table

Tagname	Current value	Percent full scale	Hi Hi	Hi	Lo	Lo Lo	Quality
Tagname	CV	PFS	HiHi	Hi	Lo	LoLo	Quality

☐ Enabled

☐ Create DB-Runtime

Refresh rate: 1000 (Milliseconds)

Table name: AnalogTableOut

☑ All analog points

Analog deadband: 0.00100

Connection parameters

```
DriverID=ODBC
ODBCDriver={Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb)}
User_Name=
Password=
Database=C:\PeakHMIAnalogOut.xls
ODBCAdvanced=ReadOnly=False
```

Digital table

Tagname	Current value	Falling	Rising	Quality
Tagname	CV	Falling	Rising	Quality

☐ Enabled

☐ Create DB-Runtime

Refresh rate: 1000 (Milliseconds)

Table name: DigitalTableOut

☑ All digital points

Connection parameters

```
DriverID=ODBC
ODBCDriver={Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb)}
User_Name=
Password=
Database=C:\PeakHMIDigitalOut.xls
ODBCAdvanced=ReadOnly=False
```

Analog and Digital table

Each table has several fields. Each column must have a name and it must be unique for the table.

The column/field names cannot be any word reserved by the database. (e.g. Date, Time, Add, Counter)

Analog table

Field name	**Type**
Tagname	string
Current value	float
Percent full scale	float
Hi Hi	Boolean
Hi	Boolean
Lo	Boolean
Lo Lo	Boolean
Quality	Boolean

Digital table

Field name	**Type**
Tagname	string
Current value	Boolean
Falling	Boolean
Rising	Boolean
Quality	Boolean

Enabled

If enabled at runtime a connection will be made to the database.

Table name

The name of the table in the database. For Excel this is the sheet name.

All analog points/All digital points

Analog/digital point status will be monitored and written to the database upon a change of value. If enabled all of the point will be monitored. If not enabled the point(s) to monitor must be selected via the "Select Points" button.

Create DB-Runtime

This should not be enabled. As an "in" data source the rows should be configured with the values in the fields. This is not applicable to all database types and file locations.

Excel: If enabled the database file will be deleted, if present, and a new one created with the correct column headings. Excel is not a database. It has some of the features of a database. The database file should only contain the header and table name definition. The HMI will not save any other data to the file at configuration or runtime.

For ODBC In, other programs should not modify the database or database definition.

WARNING: Excel does not allow the editing of sheets via ODBC while the file is open in Excel. The error messages returned by Excel will not indicate the correct solution - quit Excel.

Microsoft Access:
No records are deleted. The table should only contain the desired points as configured. Rows with non-configured data are, not efficient.

Analog deadband

This value is the minimum difference between the old value and current value to cause the change logic to execute.

Floating point numbers are represented in binary fractions and therefore are always an approximation of a decimal fraction.

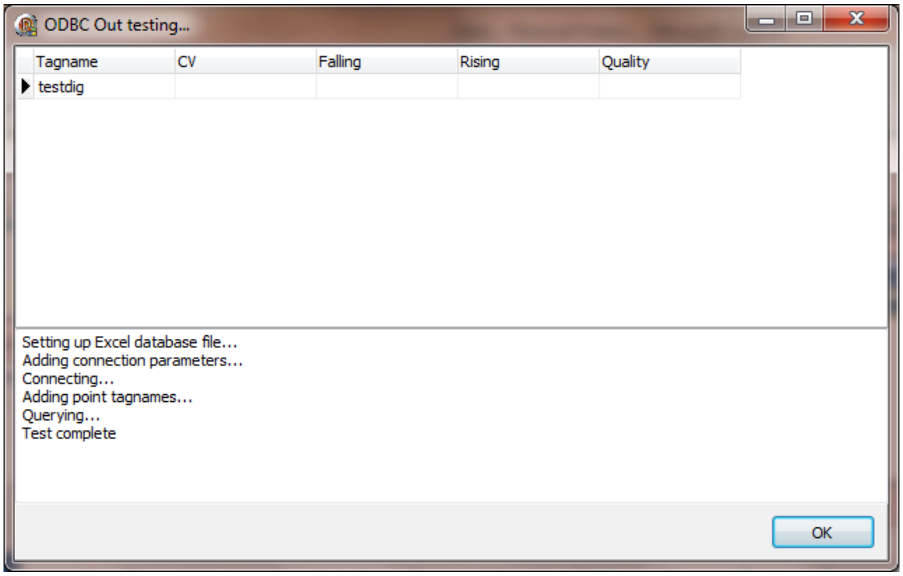
That is why occasionally you see a value like 1.9800000000000001 for something that you would expect to have only a few decimal places of precision. When comparing two floating point numbers, the comparison should be on how close they are to each other rather than testing for equality.

AD = 0.001 (default)
Change = ((a - b) >= AD)

Connection parameters

[Refer to the section below.]()

Test



Tagname	CV	Falling	Rising	Quality
testdig				

```
Setting up Excel database file...
Adding connection parameters...
Connecting...
Adding point tagnames...
Querying...
Test complete
```

Selecting this button will attempt to create a connection to the database, set up the table and write the configured tagnames to the database. WARNING: Verify the database file is not use before selecting the 'Test' button.

Excel: An attempt is made to delete any file with the database name and recreate the file with the correct headers.

Connection Parameters

Each database may have additional connection parameters. Please refer to the database supplier for required information.

The required connection parameters vary by connection type.

Direct connect to the data base

At least these three parameters must be present for direct connection to a database via ODBC.

DriverID
ODBCDriver
Database

Connect via DSN (Data source name) entry to database (ODBC Data Source Administrator)

DataSource
The format for each line is a name/value pair and the format is name=value

Note:
1. The Database file path is an example.

Examples:

Excel

DriverID=ODBC
ODBCDriver={Microsoft Excel Driver (*.xls, *.xlsx, *.xlsm, *.xlsb)}
User_Name=
Password=
Database=C:\HMIAnalogOut.xls
ODBCAdvanced=ReadOnly=False

Notes for Excel
1. The data will be placed on the first sheet.
2. Generally, Excel does not allow the editing of sheets via ODBC while the file is open in Excel. The error messages returned by Excel will not indicate the correct solution - quit Excel.
3. When running the HMI and the spread sheet opens or becomes visible, a copy of Excel is running. Use the 'Task Manager' to stop all Excel processes.
4. If an error appears: 'Data source name not found and no default driver specified.' the Microsoft OBDC driver is not installed. You might be able to get it from: http://www.microsoft.com/downloads/en/details.aspx?familyid=7554f536-8c28-4598-9b72-ef94e038c891&displaylang=en

Access

```
DriverID=ODBC
ODBCDriver={Microsoft Access Driver (*.mdb, *.accdb)}
User_Name=
Password=
Database=Y:\HMIAnalogOut.mdb
ODBCAdvanced=ReadOnly=False
```

Notes for Access

1. Files with extension "mdb" are for Access 2003 and files with extension "accdb" are for Access 2007.
2. Example using Universal Naming Convention (UNC) format with file sharing enabled - Database=\\192.168.1.3\Testing\HMIAnalogOut.accdb
3. Using a mapped drive with file sharing enabled - Database=Y:\HMIAnalogOut.accdb

MySql

Local

```
DriverID=ODBC
ODBCDriver=MySQL ODBC 5.1 Driver
User_Name=HMILocal
Password=local
Database=hmidb
```

Remote

```
DriverID=ODBC
ODBCDriver=MySQL ODBC 5.1 Driver
User_Name=HMIRemote
Password=remote
Database=hmidb
ODBCAdvanced=SERVER=192.168.1.3
```

Notes for MySQL

1. The user name and password are case sensitive.

Microsoft SQL Express

These examples used Windows Authentication.

Local

```
DriverID=ODBC
ODBCDriver=SQL Server
Database=hmidb
ODBCAdvanced=SERVER=S2003\SQLEXPRESS
```

Remote

```
DriverID=ODBC
ODBCDriver=SQL Server
Database=hmidb
LoginTimeout=10
ODBCAdvanced=SERVER=192.168.1.68\SQLEXPRESS
```

These examples used SQL Authentication mode.

Local

```
DriverID=ODBC
ODBCDriver=SQL Server
Database=hmidb
User_Name=HMILocal
Password=local
ODBCAdvanced=SERVER=S2003\SQLEXPRESS
```

Remote

```
DriverID=ODBC
ODBCDriver=SQL Server
Database=hmidb
User_Name=HMIRemote
Password=remote
LoginTimeout=10
ODBCAdvanced=SERVER=192.168.1.68\SQLEXPRESS
```

Notes for Microsoft SQL Express

1. In the example, S2003 is the computer name and SQLEXPRESS is the SQL server name (SQL instance name).
2. If using the "Windows Authentication" to authorize access do not supply a User_Name or Password.

ODBC In/Out commands

Notes:
#1 Unless noted these commands operate on 'in memory' data only. Changes are not saved to the project.
#2 These commands only work on a port that is not enabled. Ports that are enabled are always connected at runtime issuing read/writes. The underlying data structure cannot be changed while the port is enabled.

ODBCAddToInList

This adds a read to the 'in' list of commands.

ODBCAddToOutList

This adds a write to the 'out' list of commands.

ODBCClearInList

This clears the 'in' list of commands. All reads from the database to points and global strings are deleted.

ODBCClearOutList

This clears the 'out' list of commands. All writes to the database from points and global strings are deleted.

ODBCIssueRead

This will connect to the database and read all the commands in the 'in' list.

ODBCIssueWrite

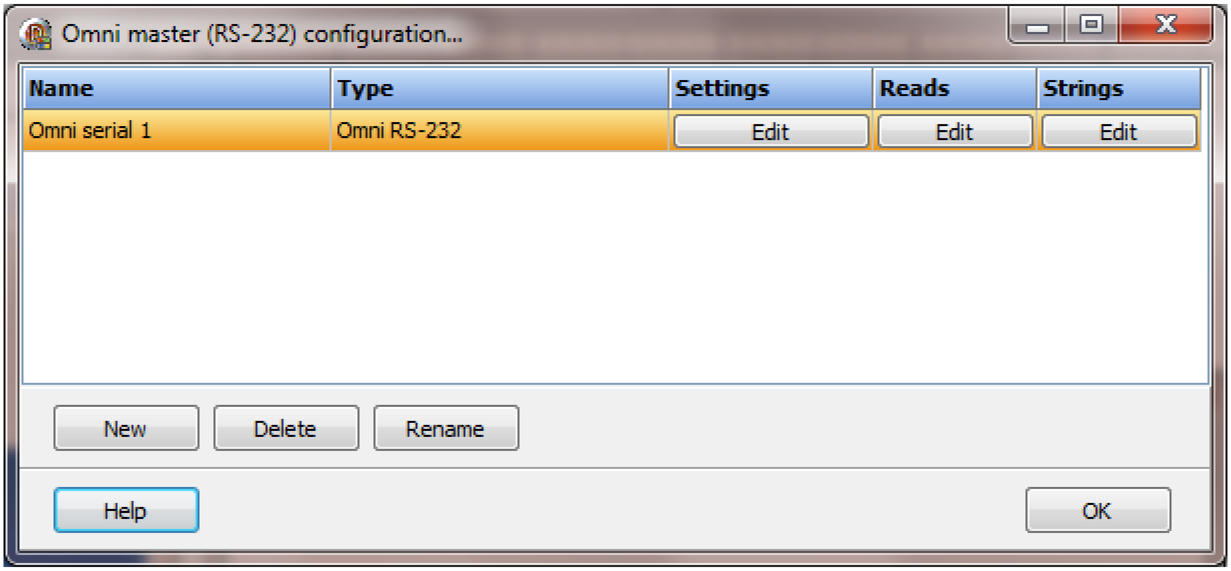
This will connect to the database and write all the commands in the 'out' list.

ODBCSetTableName

This is used to change the table to access in the database.

OMNI SERIAL

Each Omni serial master object is listed in the window.

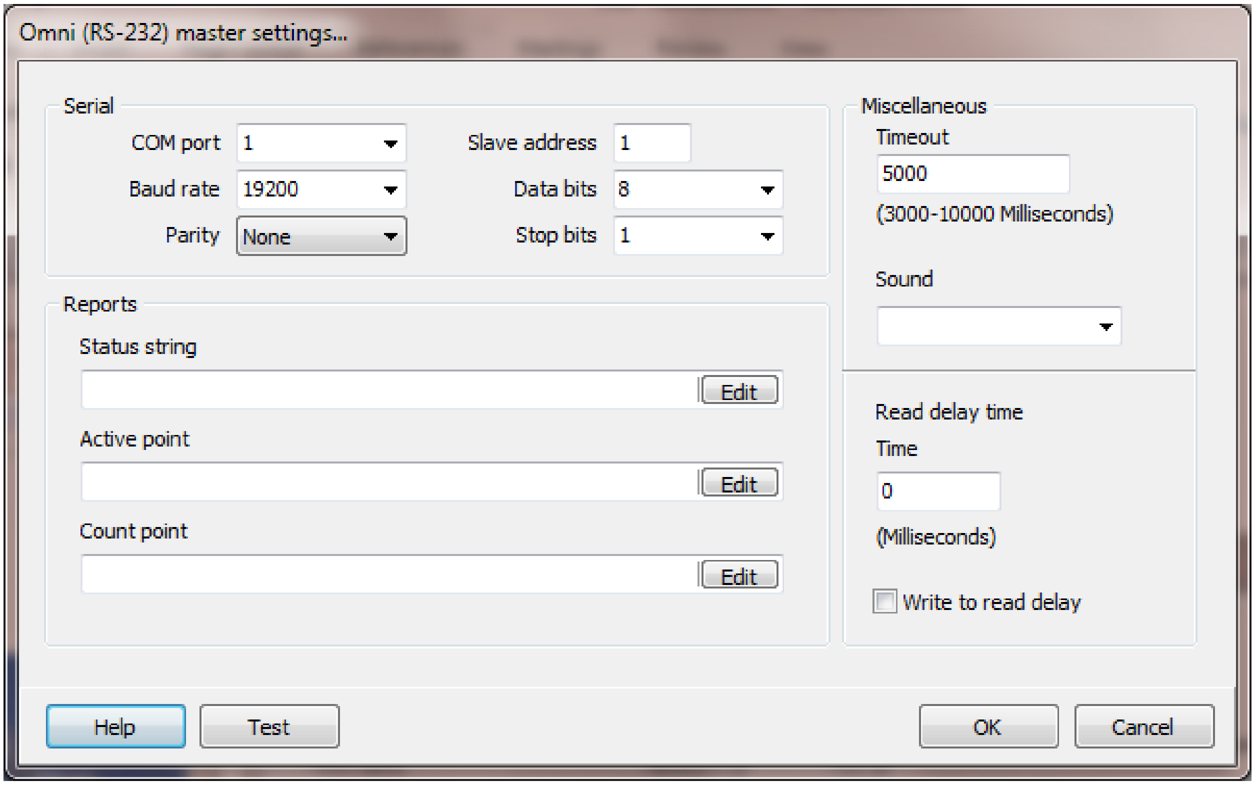

Omni master (RS-232) configuration...
Name
Type
Settings
Reads
Strings
Omni serial 1
Omni RS-232
Edit
Edit
Edit
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Omni serial master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an Omni serial master object select the "Delete" button.

Settings



COM port: 1
Baud rate: 19200
Parity: None
Slave address: 1
Data bits: 8
Stop bits: 1
Timeout: 5000 (3000-10000 Milliseconds)
Sound:
Status string:
Active point:
Count point:
Read delay time
Time: 0 (Milliseconds)
☐ Write to read delay

Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Reports

Status string (optional)

If a script global is supplied it will be updated with various strings indicating an action while a report is being collected.

Active point (optional)

If a digital point is defined it will be set true when report collection is initiated and set false when the collection ends. If more than one report is queued, the flag will stay true while the reports are collected.

Count (optional)

The 'Historical Alarm/Audit Trail' report retrieves 'count' records from the flow computer. If an analog point is defined its current value is used. The alarm record count is limited to 500 records. The audit trails record count is limited to 150 records.

If the count is zero (0) or the point is not defined, 25 records will be retrieved.

If then count is less than zero (0) or greater than the report limit the report will not be retrieved.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

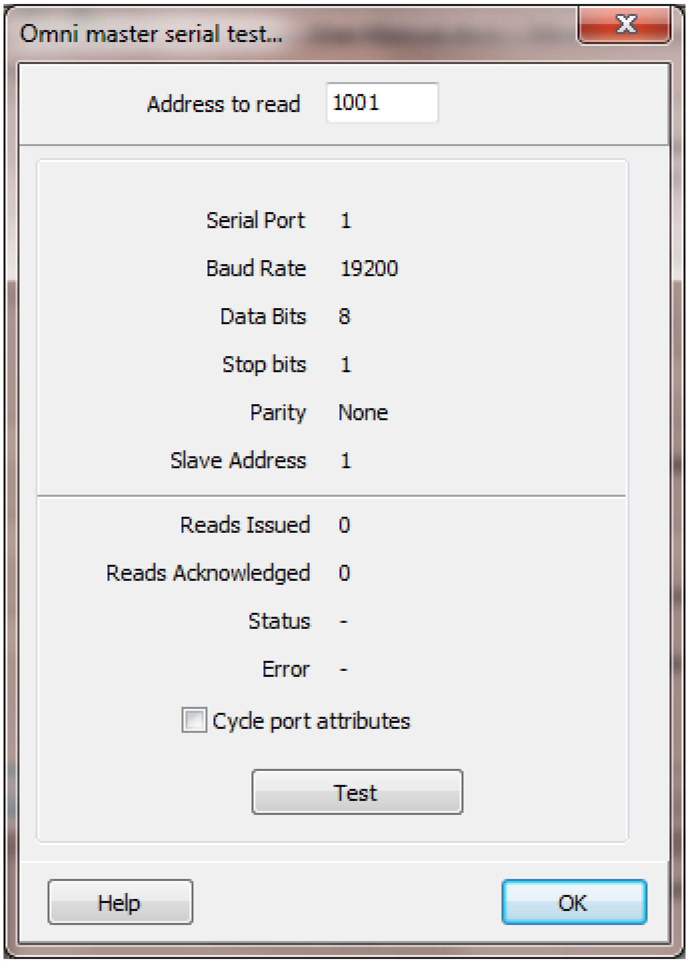
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Test button



Address to read 1001

Serial Port 1
Baud Rate 19200
Data Bits 8
Stop bits 1
Parity None
Slave Address 1

Reads Issued 0
Reads Acknowledged 0
Status -
Error -

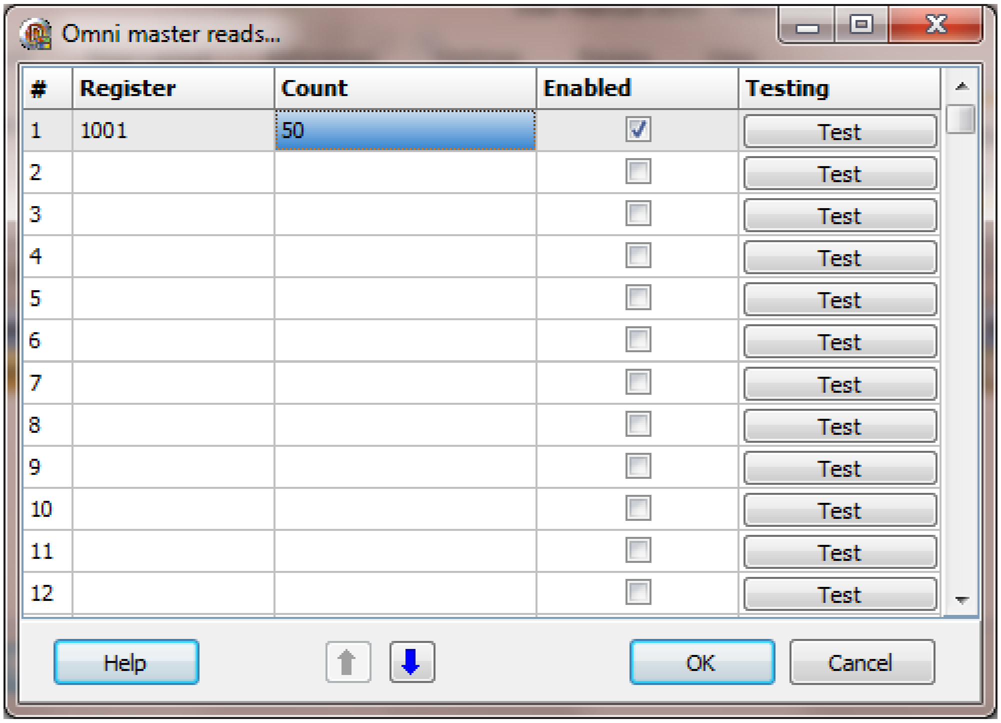
☐ Cycle port attributes

When the test button is selected the program will attempt to read one element of data from the device at the address entered.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Register	Count	Enabled	Testing
1	1001	50	☑	Test
2			☐	Test
3			☐	Test
4			☐	Test
5			☐	Test
6			☐	Test
7			☐	Test
8			☐	Test
9			☐	Test
10			☐	Test
11			☐	Test
12			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the Enron register address numbering system.

Register

The address must be a valid Enron address.
Any of the following addresses are valid:

Register	**Data type**
1001 - 1999	Booleans
2001 - 2999	Booleans
3001 - 3999	16 bit short integers
4001 - 4999	8 character strings
5001 - 5999	32 bit long integers
6001 - 6999	32 bit floats
7001 - 7999	32 bit floats
8000 - 8999	32 bit floats
13001 - 13999	16 bit short integers
14001 - 14999	16 character strings
15001 - 15999	32 bit long integers
17001 - 17999	32 bit floats
18001 - 18999	32 bit floats
19001 - 19999	32 bit floats

Note: Do not configure reads that overlap. Two reads that contain the same address will cause the second address to be ignored.

Count

The count is the number of a 'type' to read. Each read can request up to 125 words of data. Each data type has a limit.

Data type	**Max count per request**
Booleans	2000
16 bit short integers	125
8 character strings	31 (Each element contains 2 characters)
32 bit long integers	62
32 bit floats	62
16 character strings	15 (Each element contains 2 characters)

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

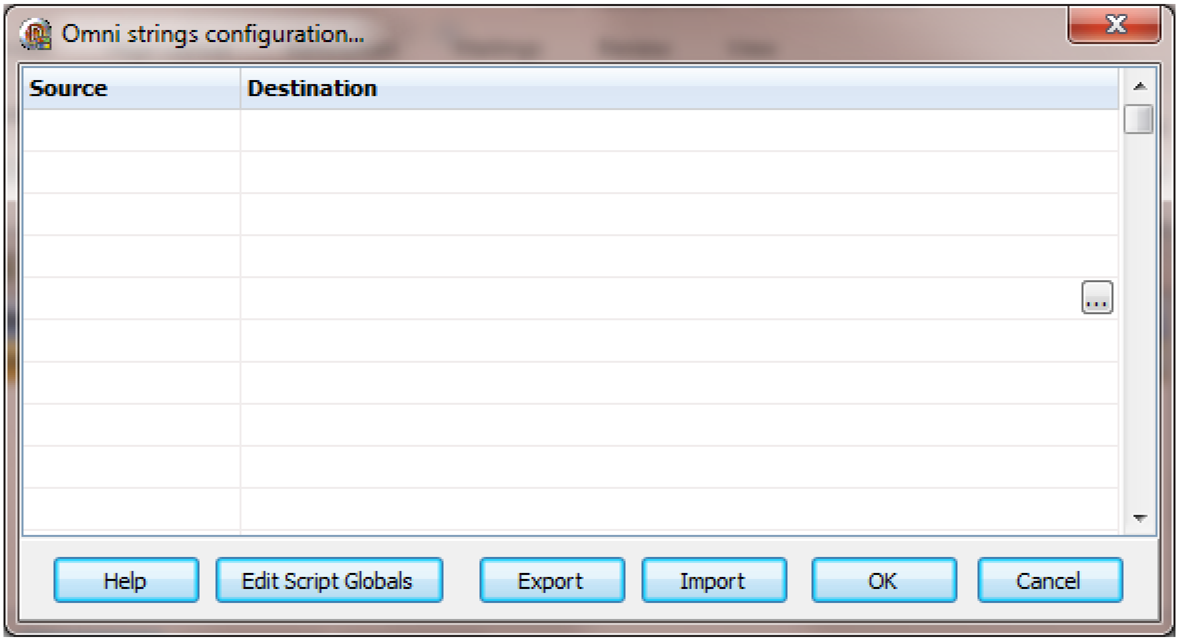
Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured.

Error messages

No register address	The value in the field is not a Enron address.
Invalid count	The count must be between 1 and 2000.
Exceeds 999	The register plus the count exceeds the maximum address range.
Invalid Enron address	The value in the field is an invalid Enron address.

Strings



Strings are not regular points. They do not have alarms, printing, etc. Strings may be displayed in any window via the "Script Global" animation. Any other actions, parsing, comparing, etc. must be done in scripts.

Source

This is the register address in the PLC.

Destination (optional)

If desired, select a script global location and the string will be copied to the location when the string value is returned by the external device. If this option is used or not the string may still be accessed via the "StringGet" and "StringSet" script commands. If this is configured and access to the string, in a script, is desired use the "GlobalGet" or "StringGet" to copy the string. The format of the destination is: <section>.<name>.

Export

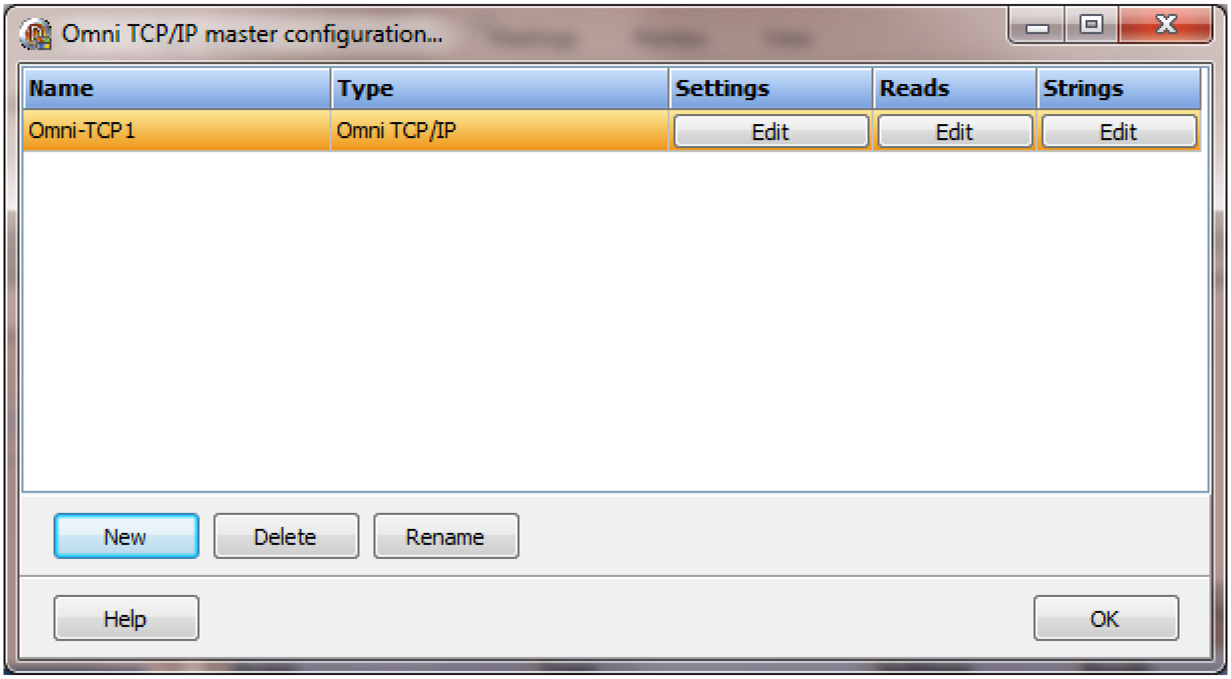
This is used to export the configuration to an Excel worksheet.

Import

This is used to import string configurations from an Excel worksheet. The contents of the grid are completely replaced by the contents of the file.

OMNI TCP/IP

Each Omni TCP/IP master object is listed in the window.


Omni TCP/IP master configuration...
New
Delete
Rename
Help
OK

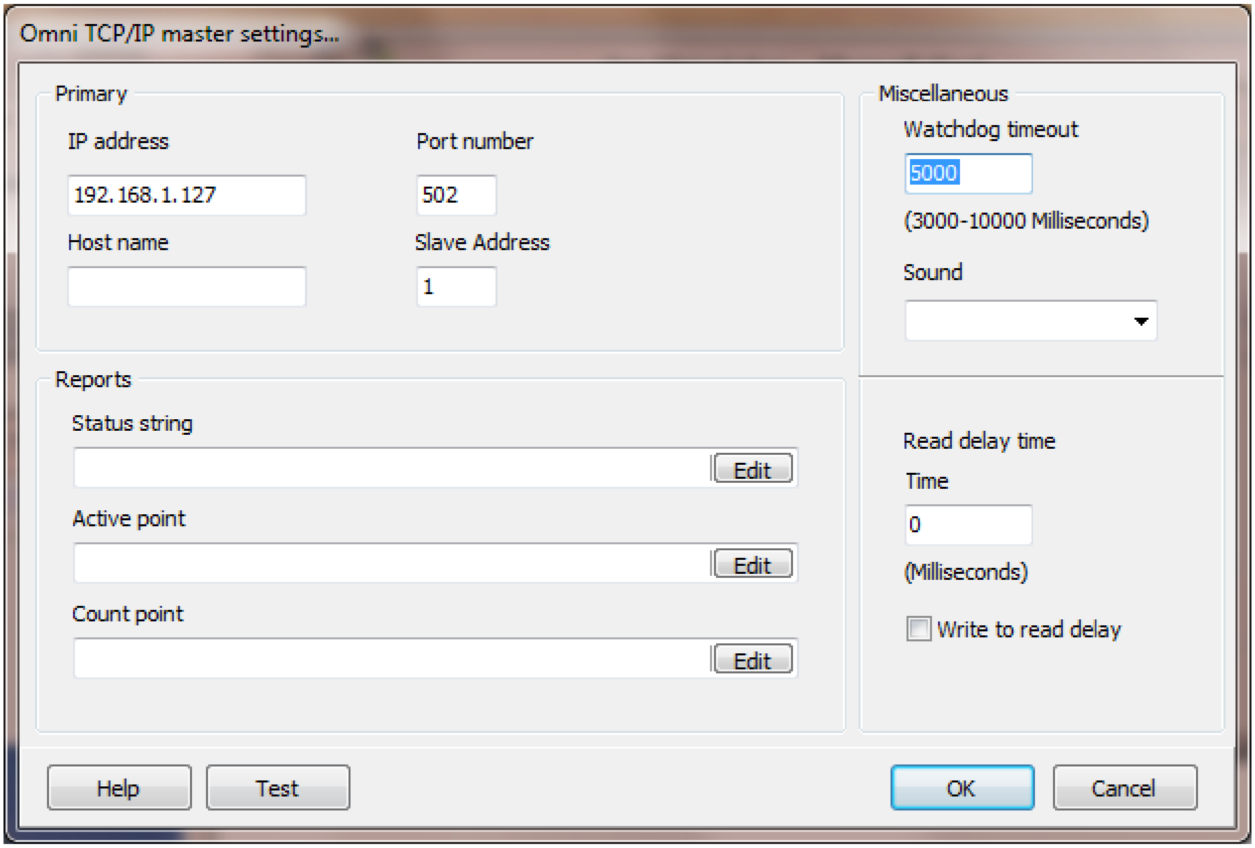
Name	Type	Settings	Reads	Strings
Omni-TCP1	Omni TCP/IP	Edit	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Omni TCP/IP master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an Omni TCP/IP master object select the "Delete" button.

Settings



Omni TCP/IP master settings...

Primary

IP address: 192.168.1.127

Port number: 502

Host name:

Slave Address: 1

Miscellaneous

Watchdog timeout: 5000 (3000-10000 Milliseconds)

Read delay time

Time: 0 (Milliseconds)

☐ Write to read delay

Reports
Status string
Edit
Active point
Edit
Count point
Edit
Sound
Help
Test
OK
Cancel

Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Reports

Status string (optional)

If a script global is supplied it will be updated with various strings indicating an action while a report is being collected.

Active point (optional)

If a digital point is defined it will be set true when report collection is initiated and set false when the collection ends. If more than one report is queued, the flag will stay true while the reports are collected.

Count (optional)

The 'Historical Alarm/Audit Trail' report retrieves 'count' records from the flow computer. If an analog point is defined its current value is used. The alarm record count is limited to 500 records. The audit trails record count is limited to 150 records.

If the count is zero (0) or the point is not defined, 25 records will be retrieved.

If then count is less than zero (0) or greater than the report limit the report will not be retrieved.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

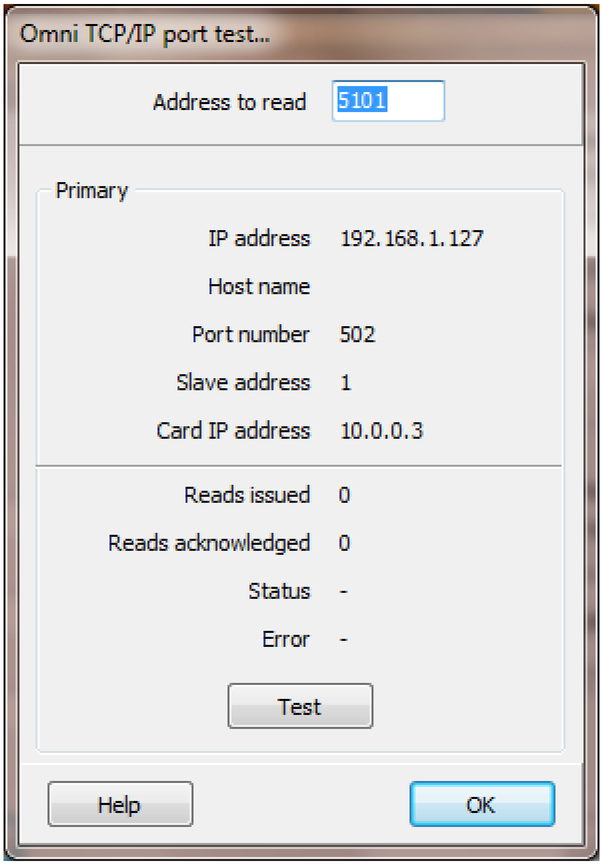
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Test button



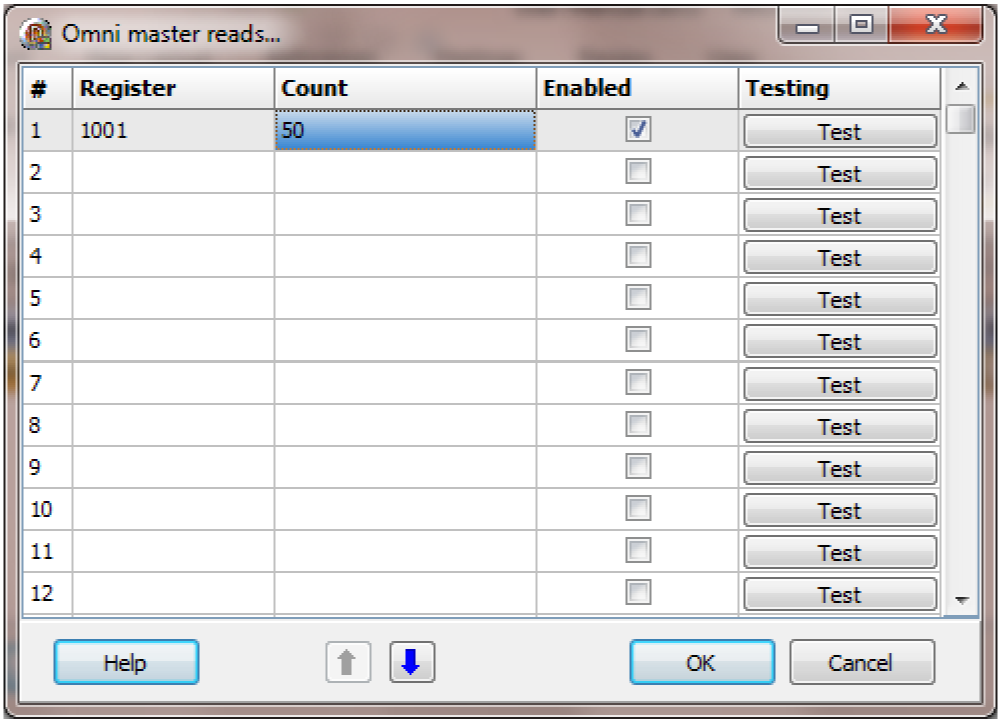
Address to read: 5101

IP address: 192.168.1.127
Host name:
Port number: 502
Slave address: 1
Card IP address: 10.0.0.3
Reads issued: 0
Reads acknowledged: 0
Status: -
Error: -

When the test button is selected the program will attempt to read one element of data from the device at the address entered.

If a "host name" is entered the IP address is ignored.

Reads



#	Register	Count	Enabled	Testing
1	1001	50	☑	Test
2			☐	Test
3			☐	Test
4			☐	Test
5			☐	Test
6			☐	Test
7			☐	Test
8			☐	Test
9			☐	Test
10			☐	Test
11			☐	Test
12			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the Enron register address numbering system.

Register

The address must be a valid Enron address.
Any of the following addresses are valid:

Register	**Data type**
1001 - 1999	Booleans
2001 - 2999	Booleans
3001 - 3999	16 bit short integers
4001 - 4999	8 character strings
5001 - 5999	32 bit long integers
6001 - 6999	32 bit floats
7001 - 7999	32 bit floats
8000 - 8999	32 bit floats
13001 - 13999	16 bit short integers
14001 - 14999	16 character strings
15001 - 15999	32 bit long integers
17001 - 17999	32 bit floats
18001 - 18999	32 bit floats
19001 - 19999	32 bit floats

Note: Do not configure reads that overlap. Two reads that contain the same address will cause the second address to be ignored.

Count

The count is the number of a 'type' to read. Each read can request up to 125 words of data. Each data type has a limit.

Data type	**Max count per request**
Booleans	2000
16 bit short integers	125
8 character strings	31 (Each element contains 2 characters)
32 bit long integers	62
32 bit floats	62
16 character strings	15 (Each element contains 2 characters)

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

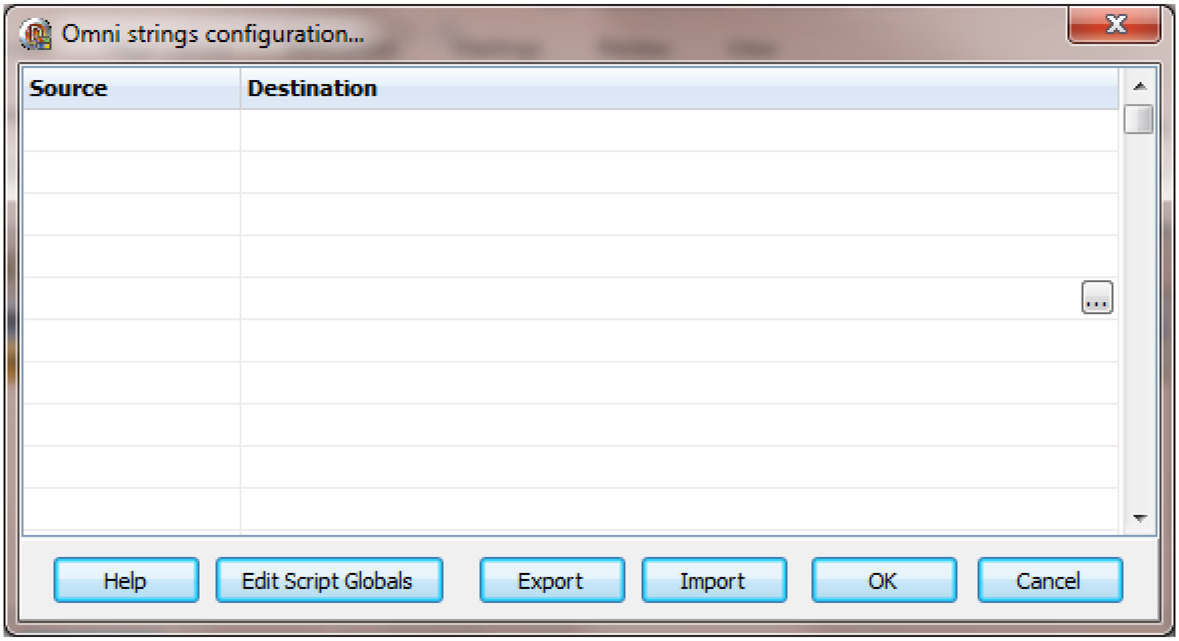
Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured.

Error messages

No register address	The value in the field is not a Enron address.
Invalid count	The count must be between 1 and 2000.
Exceeds 999	The register plus the count exceeds the maximum address range.
Invalid Enron address	The value in the field is an invalid Enron address.

Strings



Strings are not regular points. They do not have alarms, printing, etc. Strings may be displayed in any window via the "Script Global" animation. Any other actions, parsing, comparing, etc. must be done in scripts.

Source

This is the register address in the PLC.

Destination (optional)

If desired, select a script global location and the string will be copied to the location when the string value is returned by the external device. If this option is used or not the string may still be accessed via the "StringGet" and "StringSet" script commands. If this is configured and access to the string, in a script, is desired use the "GlobalGet" or "StringGet" to copy the string. The format of the destination is: <section>.<name>.

Export

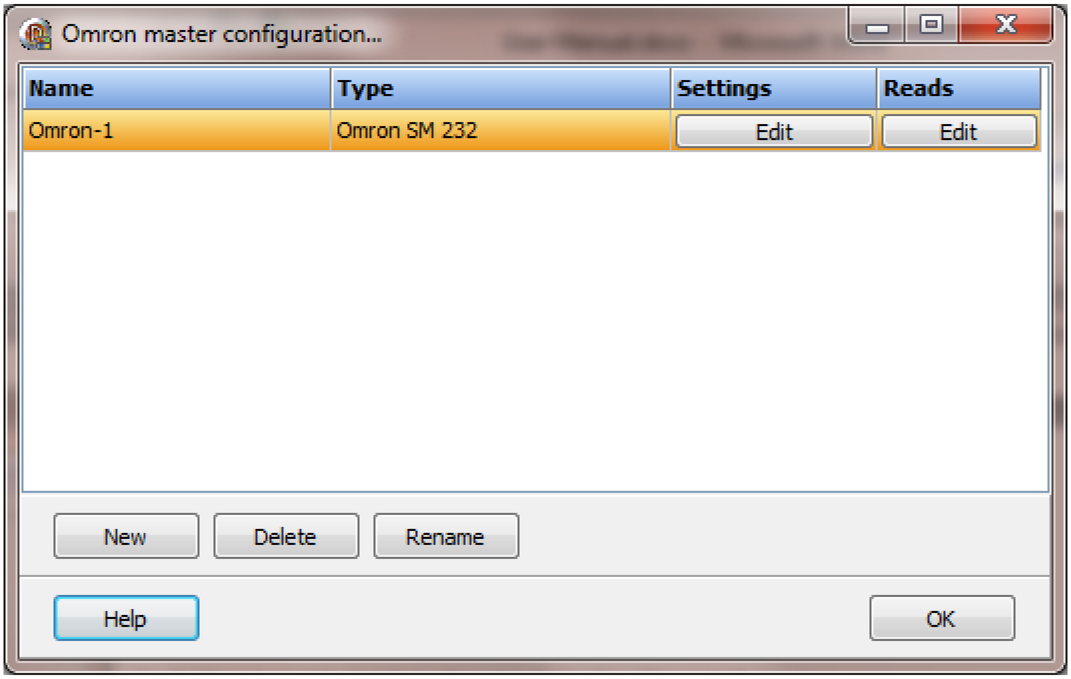
This is used to export the configuration to an Excel worksheet.

Import

This is used to import string configurations from an Excel worksheet. The contents of the grid are completely replaced by the contents of the file.

OMRON SYSMAC SERIAL

Each Omron SYSMAC serial master object is listed in the window.


Omron master configuration...
New
Delete
Rename
Help
OK

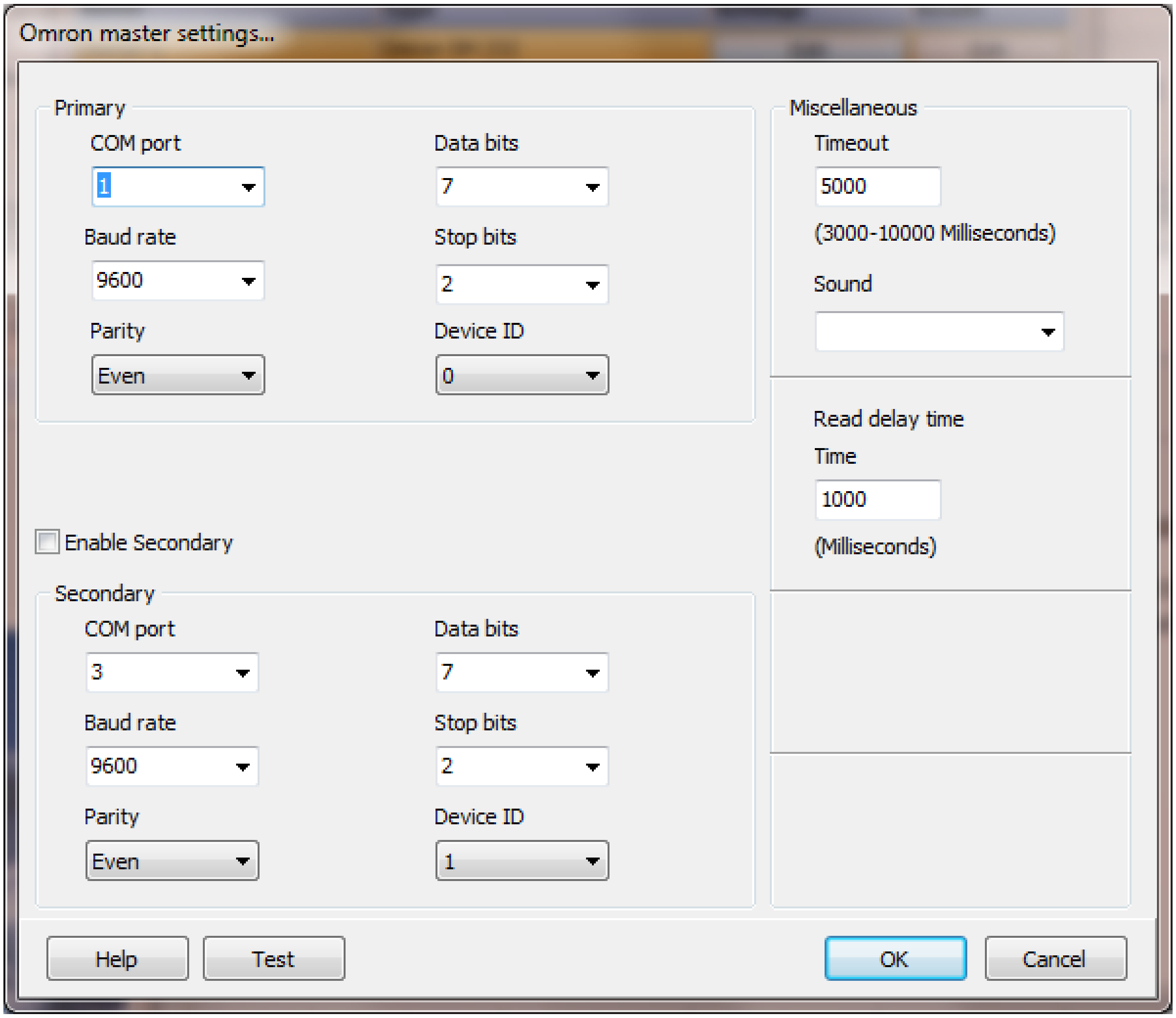
Name	Type	Settings	Reads
Omron-1	Omron SM 232	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Omron SYSMAC serial master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an Omron SYSMAC serial master object select the "Delete" button.

Settings


Omron master settings...

Primary
COM port: 1
Baud rate: 9600
Parity: Even
Data bits: 7
Stop bits: 2
Device ID: 0

☐ Enable Secondary

Secondary
COM port: 3
Baud rate: 9600
Parity: Even
Data bits: 7
Stop bits: 2
Device ID: 1

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read delay time
Time: 1000
(Milliseconds)

The serial port has a primary port and if enabled a secondary port. Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second com port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary com port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Device ID

The address of the PLC.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Float Byte Order, Longword Byte Order

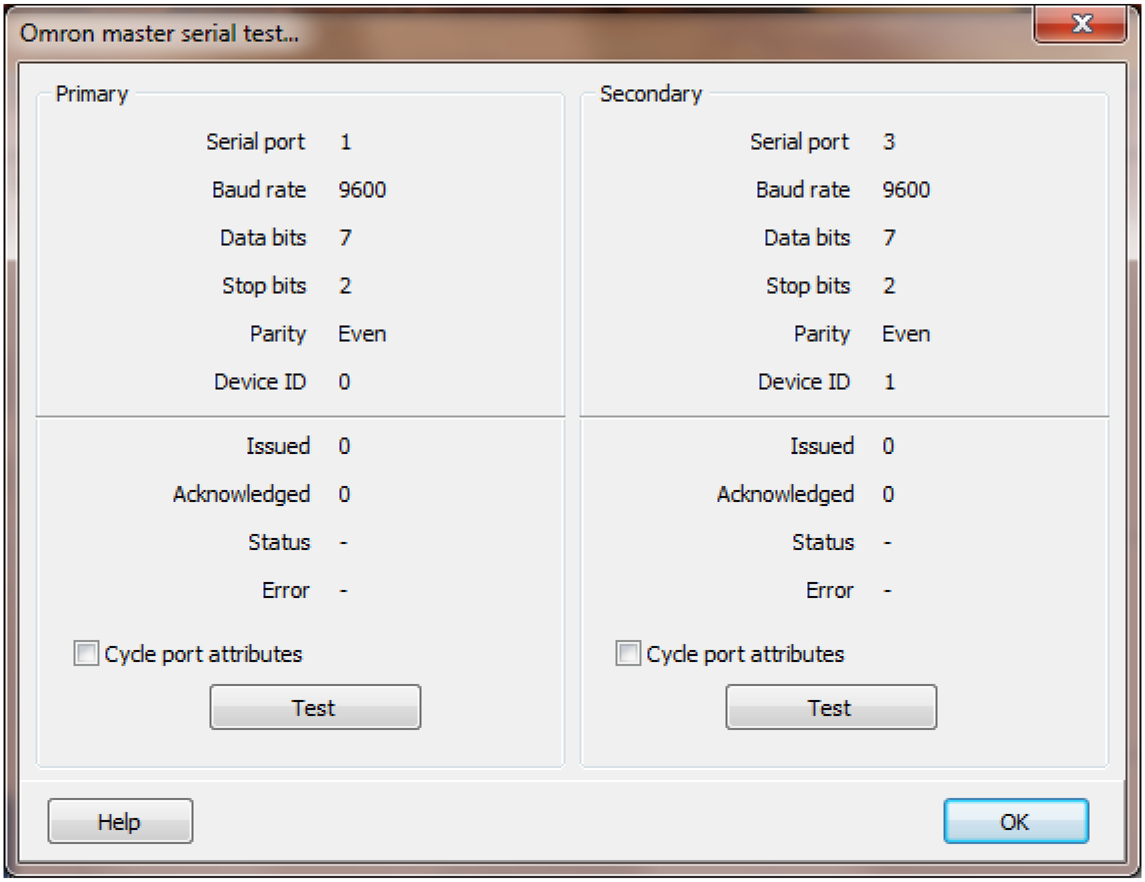
Index	Selection Type	Description	Byte Order	Comments
1	BE 4,3,2,1	Big Endian Format	4,3,2,1	
2	BE 3,4,1,2	Big Endian w/ bytes swapped	3,4,1,2	
3	LE 1,2,3,4	Little Endian Format	1,2,3,4	Default
4	LE 2,1,4,3	Little Endian w/ bytes swapped	2,1,4,3	

The register data received from the slave device is in LO-HI byte order. Regular integer data and floating data values can be in the same data read.

The 4 byte float/longword option is configured on a point level. The integer data is converted into a floating point value at the point level.

When using floating point values the byte order of the slave device might be different than the regular register byte order. Selecting the correct conversion is required to allow correct conversion to floating point.

Test button


Omron master serial test...
☐ Cycle port attributes
Test
☐ Cycle port attributes
Test
Help
OK

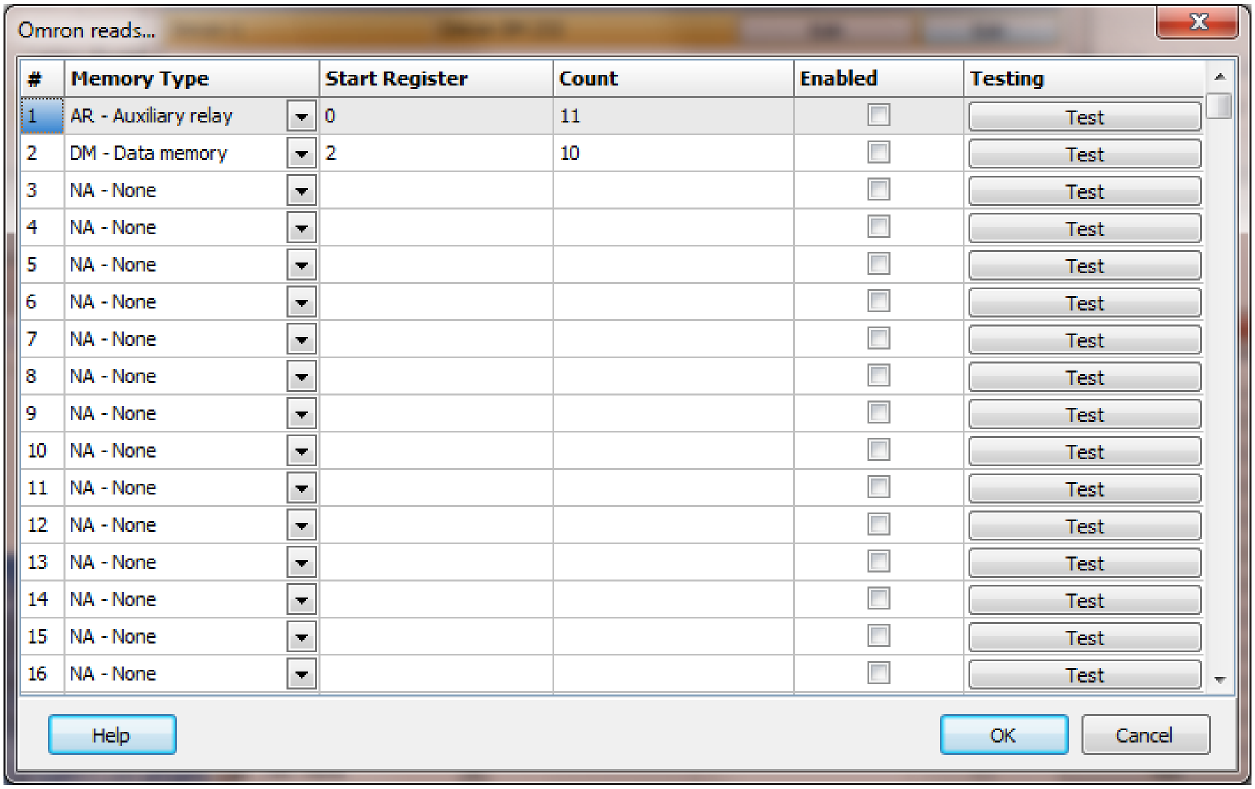
	Primary	Secondary
Serial port	1	3
Baud rate	9600	9600
Data bits	7	7
Stop bits	2	2
Parity	Even	Even
Device ID	0	1
Issued	0	0
Acknowledged	0	0
Status	-	-
Error	-	-

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	AR - Auxiliary relay	0	11	☐	Test
2	DM - Data memory	2	10	☐	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in decimal.

Address Examples

AR0, AR105, AR1.02, AR1.15	
IR0, IR105, IR1.02, IR1.15	
HR0, HR105, HR1.02, HR1.15	
LR0, LR105, LR1.02, LR1.15	
DM0, DM105, DM1.02, DM1.15	
TP0, TP45, TP99	word data type Note: This might be expressed in BCD.
TS0, TS45, TS99	Boolean data type

Notes:
1. Omron does not provide for single bit writes. A write to a digital data type will clear all other bits in the register. Only using the true state for commands and grouping all commands in a word or words not containing status bits overcomes this limitation.
2. Each bit reference must use 2 decimal places. For bits 0 to 9 use a leading 0. i.e. 01, 02, 09

Register Type

Register Type	Prefix	Radix	Data Type
Auxiliary relays	AR	Decimal	Word, float, Boolean
Internal relay	IR	Decimal	Word, float, Boolean
Holding relay	HR	Decimal	Word, float, Boolean
Link relay	LR	Decimal	Word, float, Boolean
Data memory	DM	Decimal	Word, float, Boolean
Timer/Counter PV	TP	Decimal	Word, Boolean Note: This might be expressed in BCD.
Timer/Counter state TS	Decimal	Boolean	

Start Register

The starting register to read. This is the word address of the memory area.

Count

The number of registers to read for the request in decimal. Each register is 16 bits. The protocol has a maximum of 29 words of data per request.

The timer/counter state is limited to 3 words (48 bits). Each state bit is returned as one byte.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. See 'Testing error message 'below.

Read configuration error messages

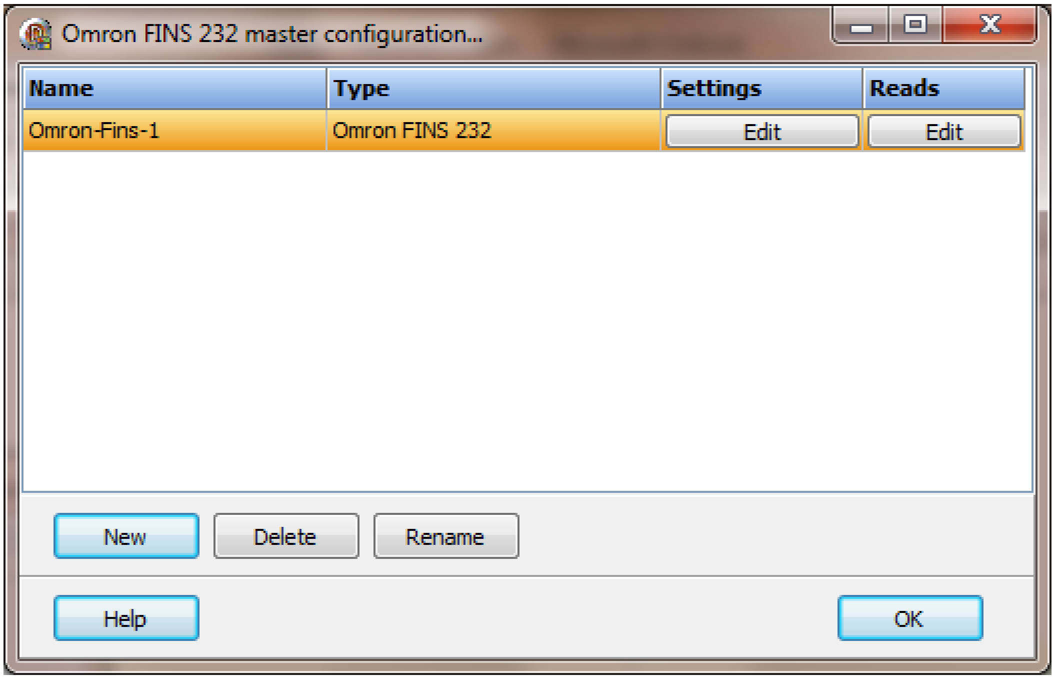
No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Timer/Counter limit 3 words (48 status bits)	Timer/Counter status bits are returned in one byte each timer/counter.

Testing error messages

Execution was not possible because the PC is in RUN mode. Change the PC mode.
Execution was not possible because the PC is in MONITOR mode. Change the PC mode.
Execution was not possible because PROM is mounted. Change the unit to RAM or EEPROM.
Address overflow (data overflow). Check the program.
Execution was not possible because the PC is in PROGRAM mode. Change the PC mode.
Execution was not possible because the PC is in DEBUG mode. Change the PC mode.
Execution was not possible because the Host Link Unit's keyswitch is set to LOCAL mode or because the command was sent to a C2000H CPU that was on standby. Change the mode or send the command to the active CPU.
Parity error.
Framing error (stop bit(s) not detected).
Overrun (the next command was received too soon).
FCS error (checksum error).
Command format error.
An incorrect data area designation was made for READ or WRITE.
Instruction not found.
Frame length error (maximum length exceeded).
Execution was not possible because of an unexecutable error clear, memory error, EEPROM write disabled, etc.
I/O table generation was not possible (unrecognized Remote I/O Unit, word overflow, duplicated word allocation).
An error occurred in the PC's CPU.
The specified Memory Unit does not exist.
The specified Memory Unit is write-protected.
Aborted due to parity error in transmit data.
Aborted due to framing error in transmit data.
Aborted due to overrun in transmit data.
Aborted due to FCS (checksum) error in transmit data.
Aborted due to format error in transmit data.
Aborted due to entry number data error in transmit data.
Aborted due to frame length error in transmit data.
Not executable because the program area is not 16 Kbytes.
Remove any possible causes of noise and resend the command.

OMRON FINS SERIAL

Each Omron FINS serial master object is listed in the window.



Omron FINS 232 master configuration...

Name	Type	Settings	Reads
Omron-Fins-1	Omron FINS 232	Edit	Edit

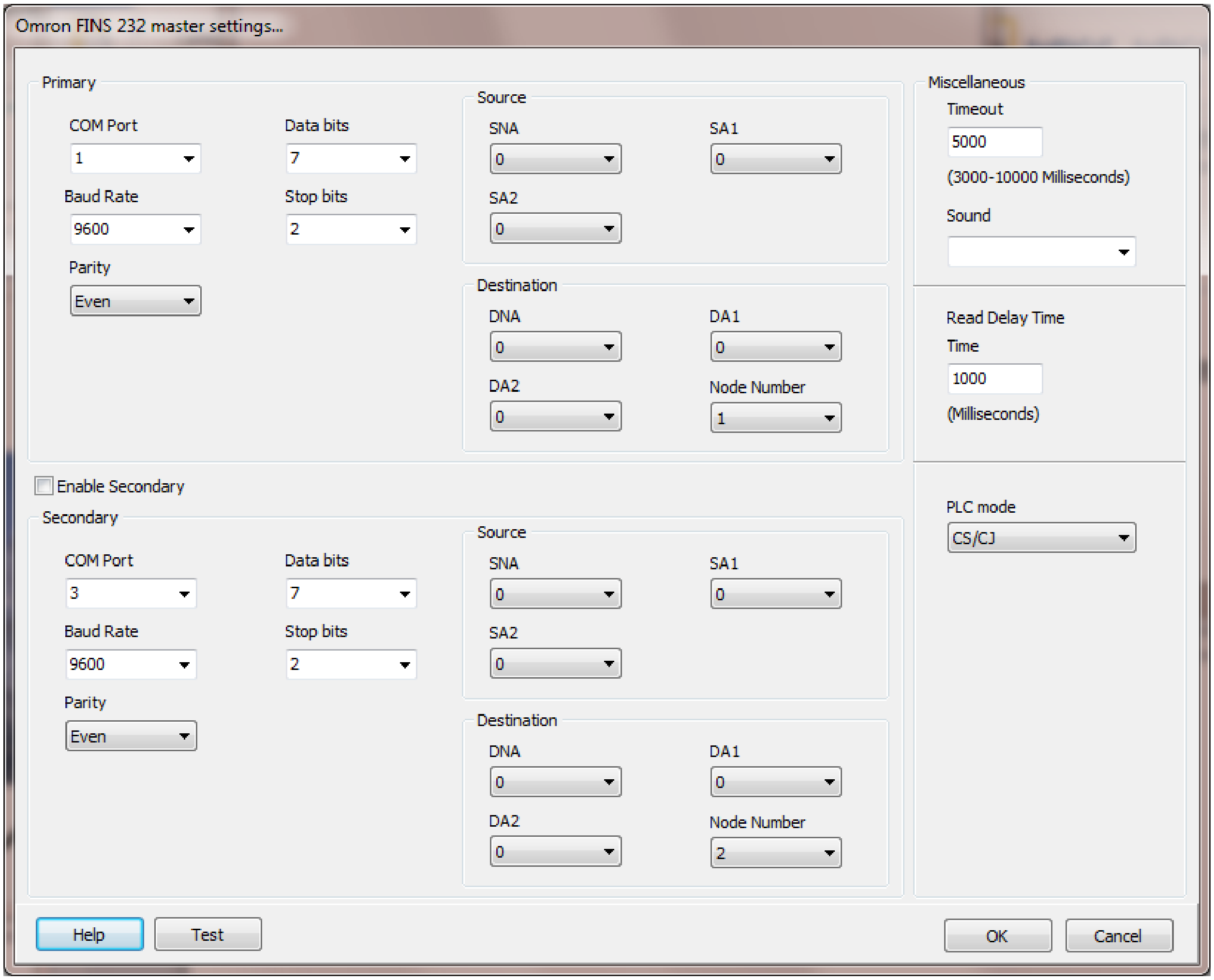
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Omron FINS serial master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an Omron FINS serial master object select the "Delete" button.

Settings



Omron FINS 232 master settings...

Primary

COM Port: 1
Data bits: 7
Baud Rate: 9600
Stop bits: 2
Parity: Even

Source
SNA: 0
SA1: 0
SA2: 0

Destination
DNA: 0
DA1: 0
DA2: 0
Node Number: 1

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time
Time: 1000
(Milliseconds)

☐ Enable Secondary

Secondary

COM Port: 3
Data bits: 7
Baud Rate: 9600
Stop bits: 2
Parity: Even

Source
SNA: 0
SA1: 0
SA2: 0

Destination
DNA: 0
DA1: 0
DA2: 0
Node Number: 2

PLC mode: CS/CJ

The serial port has a primary port and if enabled a secondary port. Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second com port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary com port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Source/Destination

These are normally all set to zero and adjusted by the PLC is needed to route the message.

SNA	Source network address
SA1	Source node number
SA2	Source unit number
DNA	Destination network address
DA1	Destination number
DA2	Destination unit number
Node number	The node number of the destination. The value is decimal.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

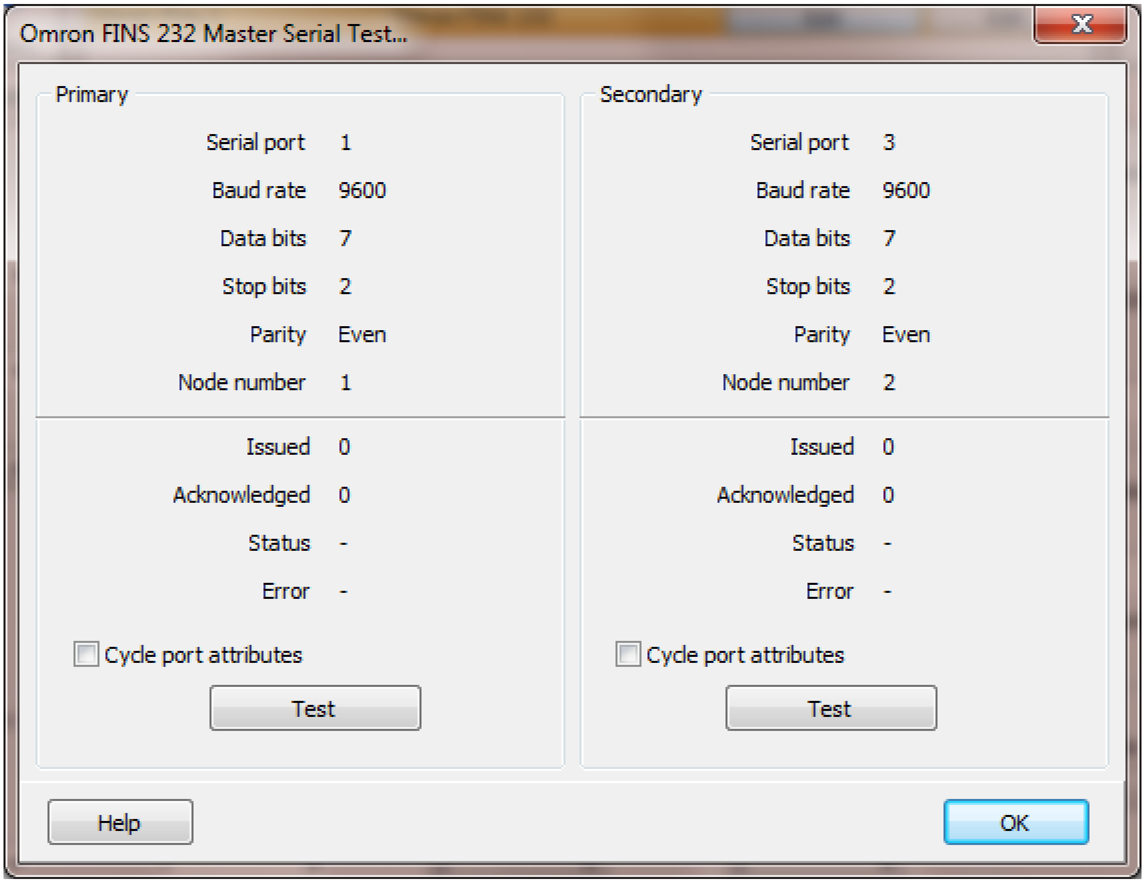
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

PLC mode

The driver supports 'C', 'CV' and 'CS/CJ' modes.

Test button


Omron FINS 232 Master Serial Test...
X
Primary
Secondary
☐ Cycle port attributes
Test
☐ Cycle port attributes
Test
Help
OK

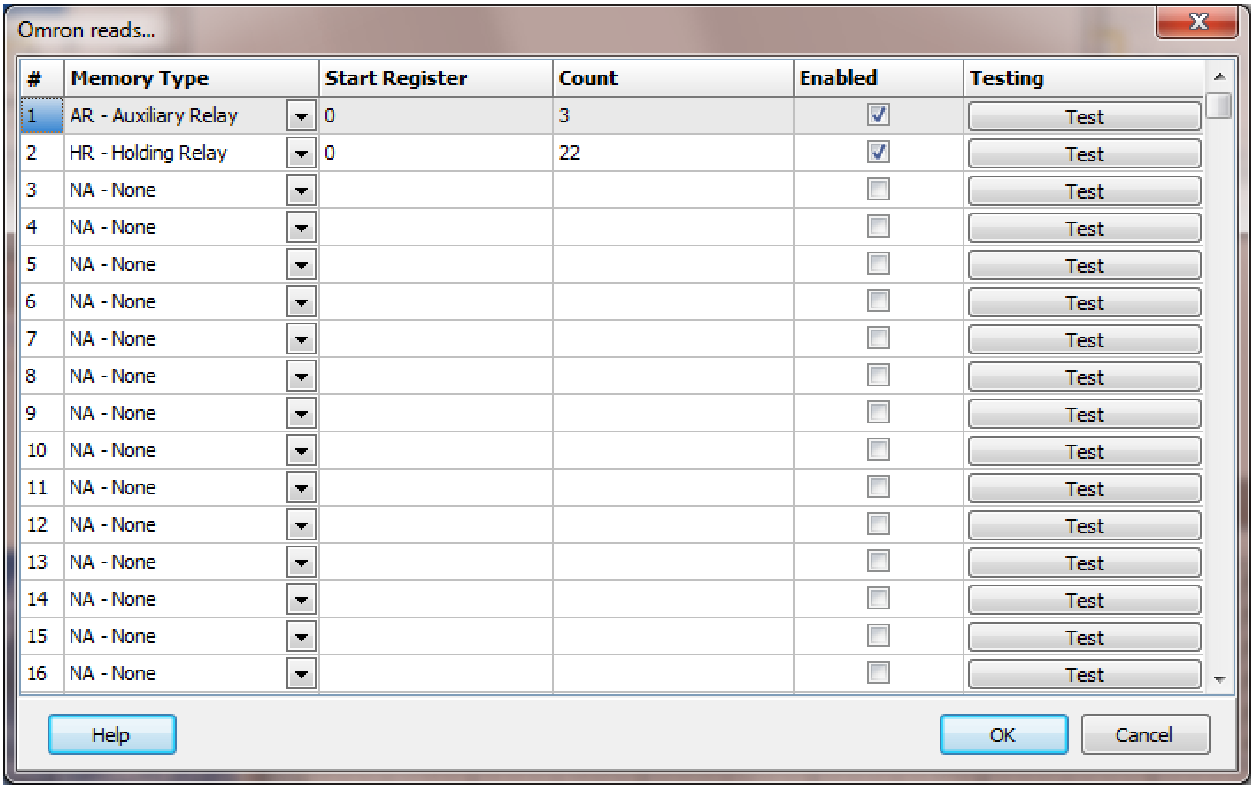
	Primary	Secondary
Serial port	1	3
Baud rate	9600	9600
Data bits	7	7
Stop bits	2	2
Parity	Even	Even
Node number	1	2
Issued	0	0
Acknowledged	0	0
Status	-	-
Error	-	-

When the test button is selected the program will send a read request to read one word starting at CIO 0.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	AR - Auxiliary Relay	0	3	☑	Test
2	HR - Holding Relay	0	22	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in decimal.

Register Type

Register Name	Prefix	Examples	Data Type
Action Flags	AC	ACxxx	Boolean
Auxiliary Area	A	Axxx, Axxx.yy	Word, double word, float, Boolean
Auxiliary Relay	AR	ARxxx, ARxxx.yy	Word, double word, float, Boolean
Bus Link	G	Gxxx, Gxxx.yy	Word, double word, float, Boolean
Core I/O Area	CIO	CIOxxx, CIOxxx.yy	Word, double word, float, Boolean
Counter	C	Cxxx	Boolean
Counter PV	CV	CVxxx	Word
Data Memory	DM	DMxxx, DMxxx.yy	Word, double word, float, Boolean
Data Register	DR	DRxxx, DRxxx.yy	Word, double word, float, Boolean
Expansion Data Memory	E	Eaa:xxx, Eaa:xxx.yy	Word, double word, float, Boolean
Holding Relay	HR	HRxxx, HRxxx.yy	Word, double word, float, Boolean
Index Register	IR	IRxxx, IRxxx.yy	Word, double word, float, Boolean
Link Relay	LR	LRxxx, LRxxx.yy	Word, double word, float, Boolean
Step Timer	ST	STxxx	Boolean

Step Timer PV	SV	SVxxx	Word
Task Flag	TK	TKxxx.yy	Boolean
Temporary Relay	TR	TRxxx, TRxxx.yy	Word, double word, float, Boolean
Timer	T	Txxx	Boolean
Timer PV	TV	TVxxx	Word
Transition Area	TN	TNxxx	Boolean
Work Area	WR	WRxxx, WRxxx.yy	Word, double word, float, Boolean

Notes:
1. Not all devices support all addressing types, register types or PLC mode.
2. Omron does not provide for single bit writes in some register types e.g. Data memory. A bit write will set the desired bit and clear all other bits in the register. Only using the true state for commands and grouping all commands in a word or words not containing status bits overcomes this limitation. Index register does not support bit writes.
3. Each bit reference must use 2 decimal places. For bits 0 to 9 use a leading 0. i.e. 01, 02, 09

Start Register

The starting register to read. This is the word address of the memory area.

Count

The number of registers to read for the request in decimal. Each register is 16 bits. The protocol has a maximum of 29 words of data per request.

The timer/counter state is limited to 3 words (48 bits). Each state bit is returned as one byte.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. See 'Testing error message 'below.

Read configuration error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.
Timer/Counter limit 3 words (48 status bits)	Timer/Counter status bits are returned in one byte each timer/counter.

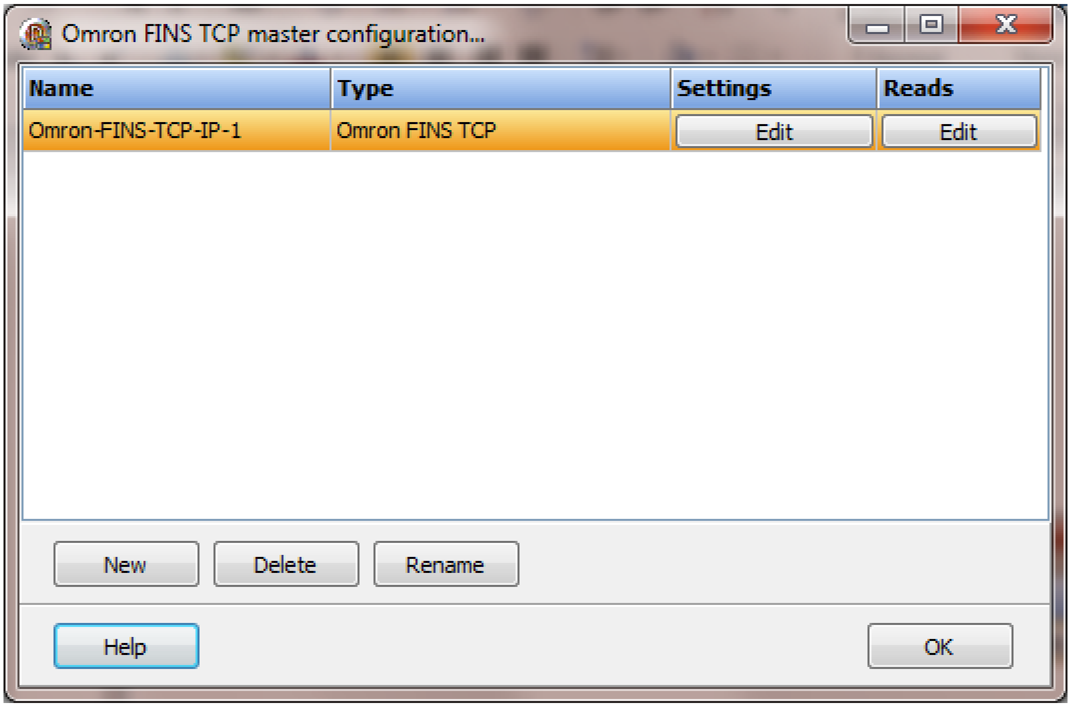
Testing error messages

Service was interrupted
Local node not part of Network
Token time-out, node number too large
Number of transmit retries exceeded
Maximum number of frames exceeded
Node number setting error (range)
Node number duplication error
Destination node not part of Network
No node with the specified node number
Third node not part of Network/Broadcasting was specified
Busy error, destination node busy
Response time-out, message packet was corrupted by noise/Response time-out, response watchdog timer interval too short/Frame lost in transmission
Error occurred in the communications controller, ERC indicator is lit
CPU error occurred in the PC at destination node
A controller error has prevented normal response from being returned.
Node number setting error
An undefined command has been used.
Cannot process command because the specified unit model or version is wrong.
Destination node number is not set in the routing table.
Routing table isn't registered.
Routing table error
The maximum number of relay nodes (2) was exceeded in the command.
The command is longer than the max. permissible length.
The command is shorter than min. permissible length.
The designated number of data items differs from the actual number.
An incorrect command format has been used.
An incorrect header has been used. (The local node's relay table or relay node's local network table is wrong.)
A correct memory area code has not been used or Expansion Data Memory is not available.

The access size specified in the command is wrong, or the first address is an odd number.
The first address is in an inaccessible area.
The end of specified word range exceeds the acceptable range.
A non-existent program no. has been specified.
The sizes of data items in the command block are wrong.
The IOM break function cannot be executed because it is already being executed.
The response block is longer than the max. permissible length.
An incorrect parameter code has been specified.
The data is protected. An attempt was made to download a file that is being uploaded.
The registered table does not exist or is incorrect./Too many files open.
The corresponding search data does not exist.
A non-existing program no. has been specified.
A non-existing file has been specified.
A verification error has occurred.
The specified area is read-only or is write-protected.
The data is protected. An attempt was made to simultaneously download and upload a file. The data link table cannot be written manual because it is set for automatic generation.
The number of files exceeds the maximum permissible. Too many files open.
A non-existing program no. has been specified.
A non-existent file has been specified.
The specified file already exists.
Data cannot be changed.
The mode is wrong (executing). Data links are active.
The mode is wrong (stopped). Data links are active.
The PC is in the PROGRAM mode.
The PC is in the DEBUG mode.
The PC is in the MONITOR mode.
The PC is in the RUN mode.
The specified node is not the control node.
The mode is wrong and the step cannot be executed.
A file device does not exist where specified.
The specified memory does not exist.
The data link table either hasn't been created or is incorrect.

OMRON FINS TCP

Each Omron FINS TCP master object is listed in the window.


Omron FINS TCP master configuration...
New
Delete
Rename
Help
OK

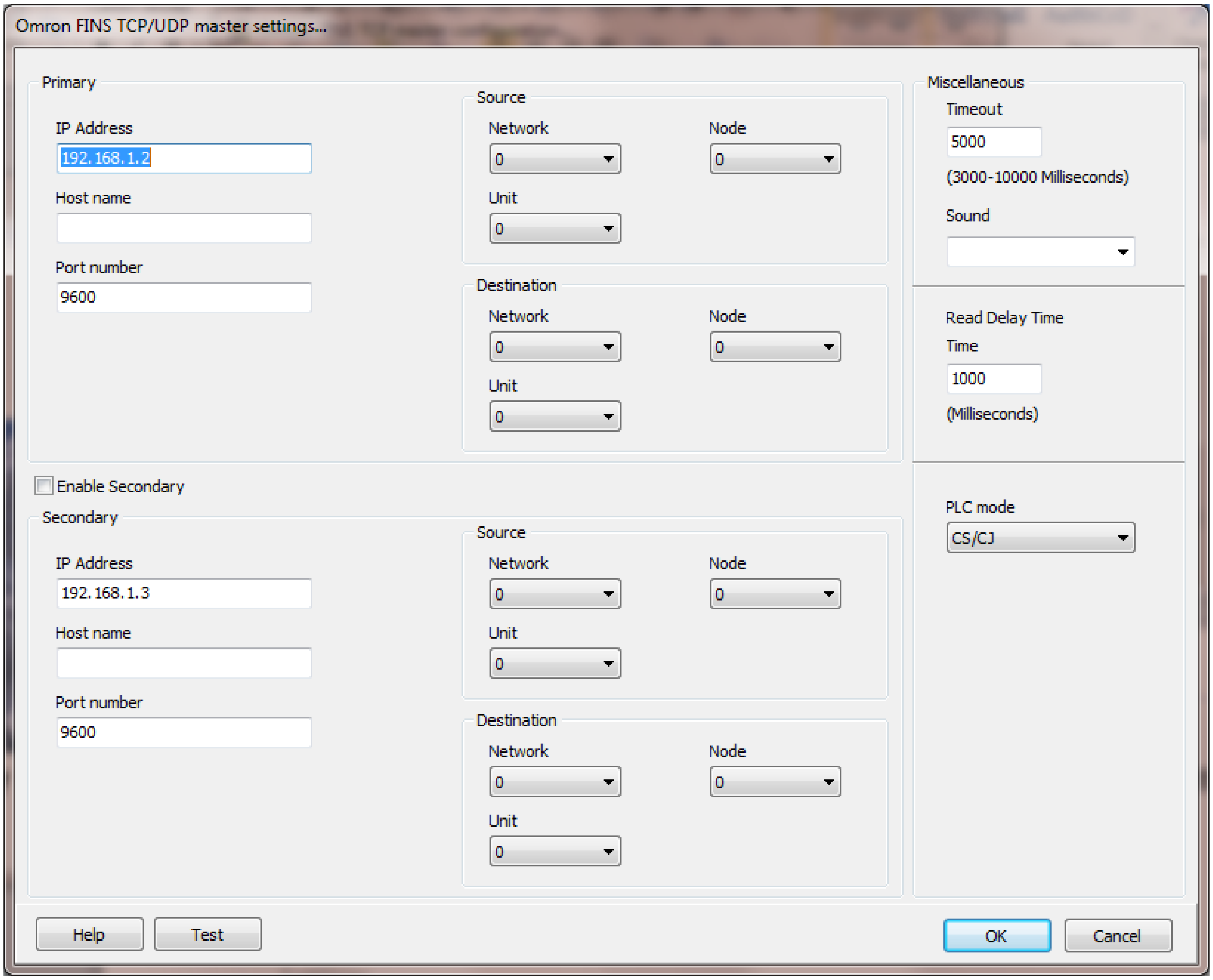
Name	Type	Settings	Reads
Omron-FINS-TCP-IP-1	Omron FINS TCP	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Omron FINS TCP master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an Omron FINS TCP master object select the "Delete" button.

Settings



Omron FINS TCP/UDP master settings...

Primary

IP Address: 192.168.1.2

Host name:

Port number: 9600

Source

Network: 0

Node: 0

Unit: 0

Destination

Network: 0

Node: 0

Unit: 0

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time

Time: 1000

(Milliseconds)

☐ Enable Secondary

Secondary

IP Address: 192.168.1.3

Host name:

Port number: 9600

Source

Network: 0

Node: 0

Unit: 0

Destination

Network: 0

Node: 0

Unit: 0

PLC mode: CS/CJ

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second com port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary com port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not

replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Source/Destination

Network address

Node number

The node is normally the same as the last digit of the IP address. Some devices allow zero (0) for automatic node assignment. The HMI uses the node value returned with the connection handshake.

Unit number

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

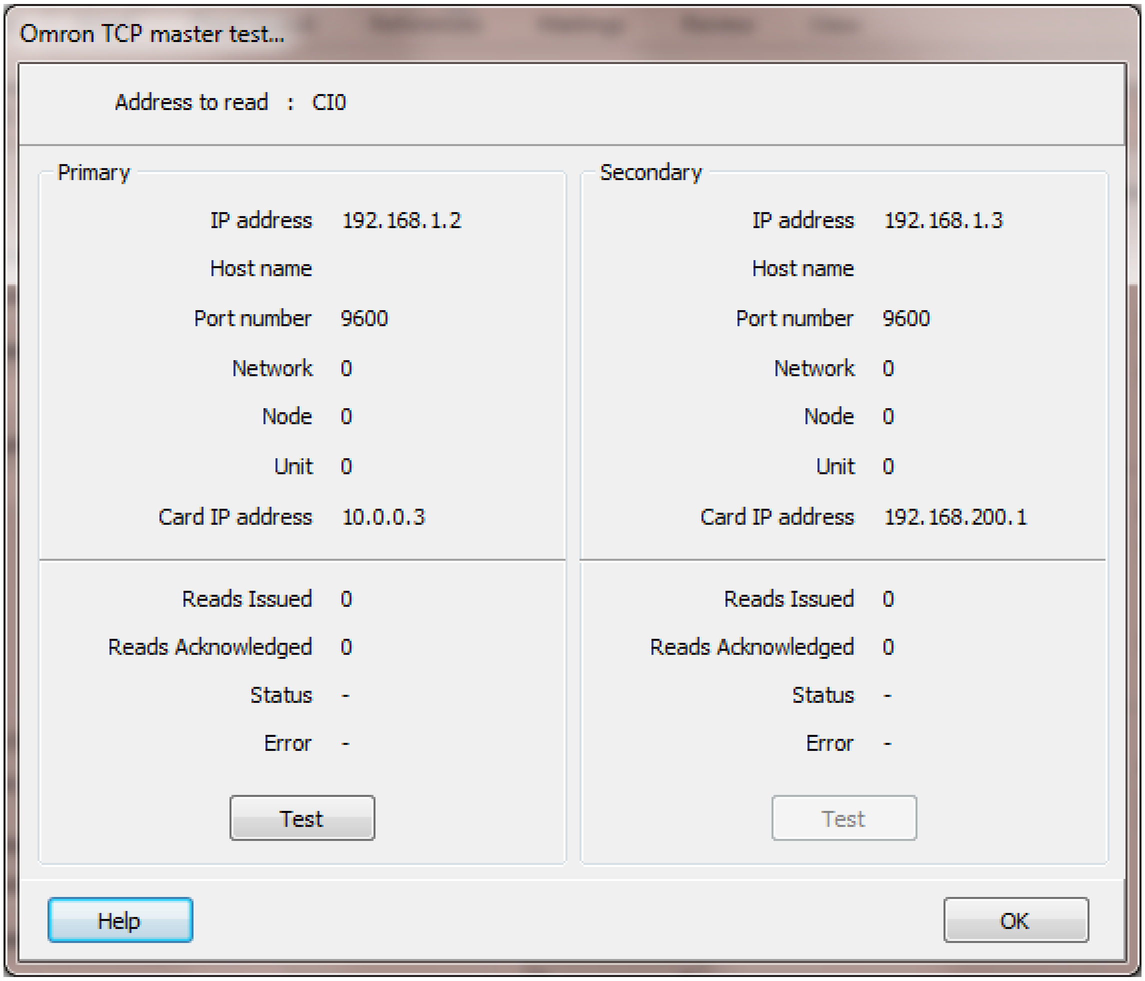
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

PLC mode

The driver supports 'C', 'CV' and 'CS/CJ' modes.

Test button



Omron TCP master test...

Address to read : CIO

Primary

IP address 192.168.1.2

Host name

Port number 9600

Network 0

Node 0

Unit 0

Card IP address 10.0.0.3

Reads Issued 0

Reads Acknowledged 0

Status -

Error -

Secondary

IP address 192.168.1.3

Host name

Port number 9600

Network 0

Node 0

Unit 0

Card IP address 192.168.200.1

Reads Issued 0

Reads Acknowledged 0

Status -

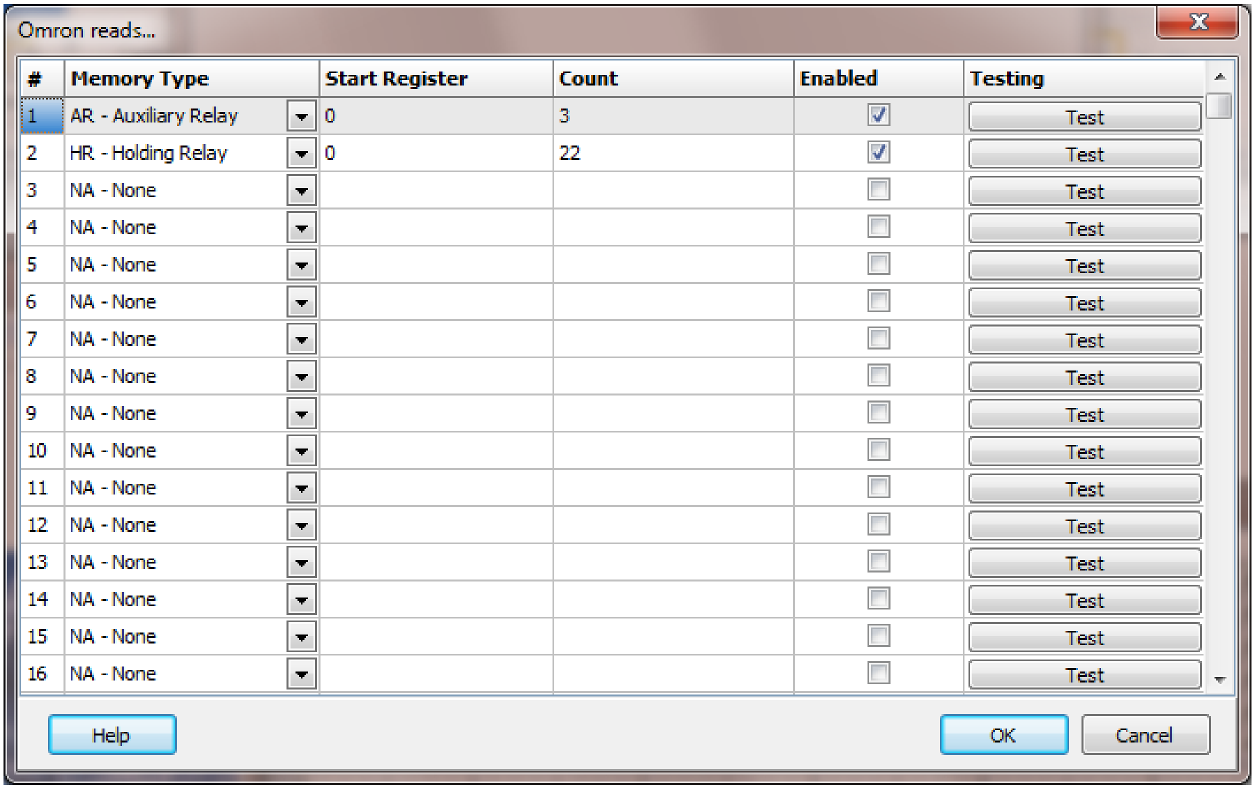
Error -

When the test button is selected the program will send a read request to read one word starting at CIO 0.

The program will attempt to use the communication parameters configured.

If a host name is supplied the IP address is ignored.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	AR - Auxiliary Relay	0	3	☑	Test
2	HR - Holding Relay	0	22	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in decimal.

Register Type

Register Name	Prefix	Examples	Data Type
Action Flags	AC	ACxxx	Boolean
Auxiliary Area	A	Axxx, Axxx.yy	Word, double word, float, Boolean
Auxiliary Relay	AR	ARxxx, ARxxx.yy	Word, double word, float, Boolean
Bus Link	G	Gxxx, Gxxx.yy	Word, double word, float, Boolean
Core I/O Area	CIO	CIOxxx, CIOxxx.yy	Word, double word, float, Boolean
Counter	C	Cxxx	Boolean
Counter PV	CV	CVxxx	Word
Data Memory	DM	DMxxx, DMxxx.yy	Word, double word, float, Boolean
Data Register	DR	DRxxx, DRxxx.yy	Word, double word, float, Boolean
Expansion Data Memory	E	Eaa:xxx, Eaa:xxx.yy	Word, double word, float, Boolean
Holding Relay	HR	HRxxx, HRxxx.yy	Word, double word, float, Boolean
Index Register	IR	IRxxx, IRxxx.yy	Word, double word, float, Boolean
Link Relay	LR	LRxxx, LRxxx.yy	Word, double word, float, Boolean
Step Timer	ST	STxxx	Boolean

Step Timer PV	SV	SVxxx	Word
Task Flag	TK	TKxxx.yy	Boolean
Temporary Relay	TR	TRxxx, TRxxx.yy	Word, double word, float, Boolean
Timer	T	Txxx	Boolean
Timer PV	TV	TVxxx	Word
Transition Area	TN	TNxxx	Boolean
Work Area	WR	WRxxx, WRxxx.yy	Word, double word, float, Boolean

Notes:
1. Not all devices support all addressing types, register types or PLC mode.
2. Omron does not provide for single bit writes in some register types e.g. Data memory. A bit write will set the desired bit and clear all other bits in the register. Only using the true state for commands and grouping all commands in a word or words not containing status bits overcomes this limitation. Index register does not support bit writes.
3. Each bit reference must use 2 decimal places. For bits 0 to 9 use a leading 0. i.e. 01, 02, 09

Start Register

The starting register to read. This is the word address of the memory area.

Count

The number of registers to read for the request in decimal. Each register is 16 bits. The protocol has a maximum of 29 words of data per request.

The timer/counter state is limited to 3 words (48 bits). Each state bit is returned as one byte.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. See 'Testing error message 'below.

Read configuration error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

Testing error messages

Service was interrupted
Local node not part of Network
Token time-out, node number too large
Number of transmit retries exceeded
Maximum number of frames exceeded
Node number setting error (range)
Node number duplication error
Destination node not part of Network
No node with the specified node number
Third node not part of Network/Broadcasting was specified
Busy error, destination node busy
Response time-out, message packet was corrupted by noise/Response time-out, response watchdog timer interval too short/Frame lost in transmission
Error occurred in the communications controller, ERC indicator is lit
CPU error occurred in the PC at destination node
A controller error has prevented normal response from being returned.
Node number setting error
An undefined command has been used.
Cannot process command because the specified unit model or version is wrong.
Destination node number is not set in the routing table.
Routing table isn't registered.
Routing table error
The maximum number of relay nodes (2) was exceeded in the command.
The command is longer than the max. permissible length.
The command is shorter than min. permissible length.
The designated number of data items differs from the actual number.
An incorrect command format has been used.
An incorrect header has been used. (The local node's relay table or relay node's local network table is wrong.)
A correct memory area code has not been used or Expansion Data Memory is not available.

The access size specified in the command is wrong, or the first address is an odd number.

The first address is in an inaccessible area.

The end of specified word range exceeds the acceptable range.

A non-existent program no. has been specified.

The sizes of data items in the command block are wrong.

The IOM break function cannot be executed because it is already being executed.

The response block is longer than the max. permissible length.

An incorrect parameter code has been specified.

The data is protected. An attempt was made to download a file that is being uploaded.

The registered table does not exist or is incorrect./Too many files open.

The corresponding search data does not exist.

A non-existing program no. has been specified.

A non-existing file has been specified.

A verification error has occurred.

The specified area is read-only or is write-protected.

The data is protected. An attempt was made to simultaneously download and upload a file. The data link table cannot be written manual because it is set for automatic generation.

The number of files exceeds the maximum permissible. Too many files open.

A non-existing program no. has been specified.

A non-existent file has been specified.

The specified file already exists.

Data cannot be changed.

The mode is wrong (executing). Data links are active.

The mode is wrong (stopped). Data links are active.

The PC is in the PROGRAM mode.

The PC is in the DEBUG mode.

The PC is in the MONITOR mode.

The PC is in the RUN mode.

The specified node is not the control node.

The mode is wrong and the step cannot be executed.

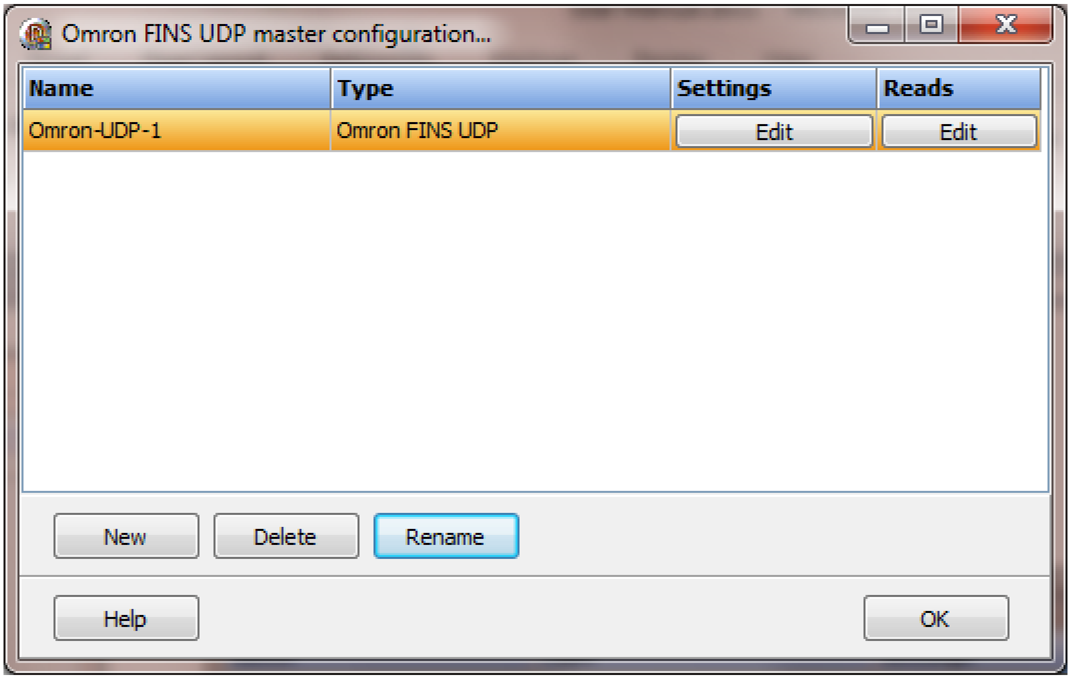
A file device does not exist where specified.

The specified memory does not exist.

The data link table either hasn't been created or is incorrect.

OMRON FINS UDP

Each Omron FINS UDP master object is listed in the window.

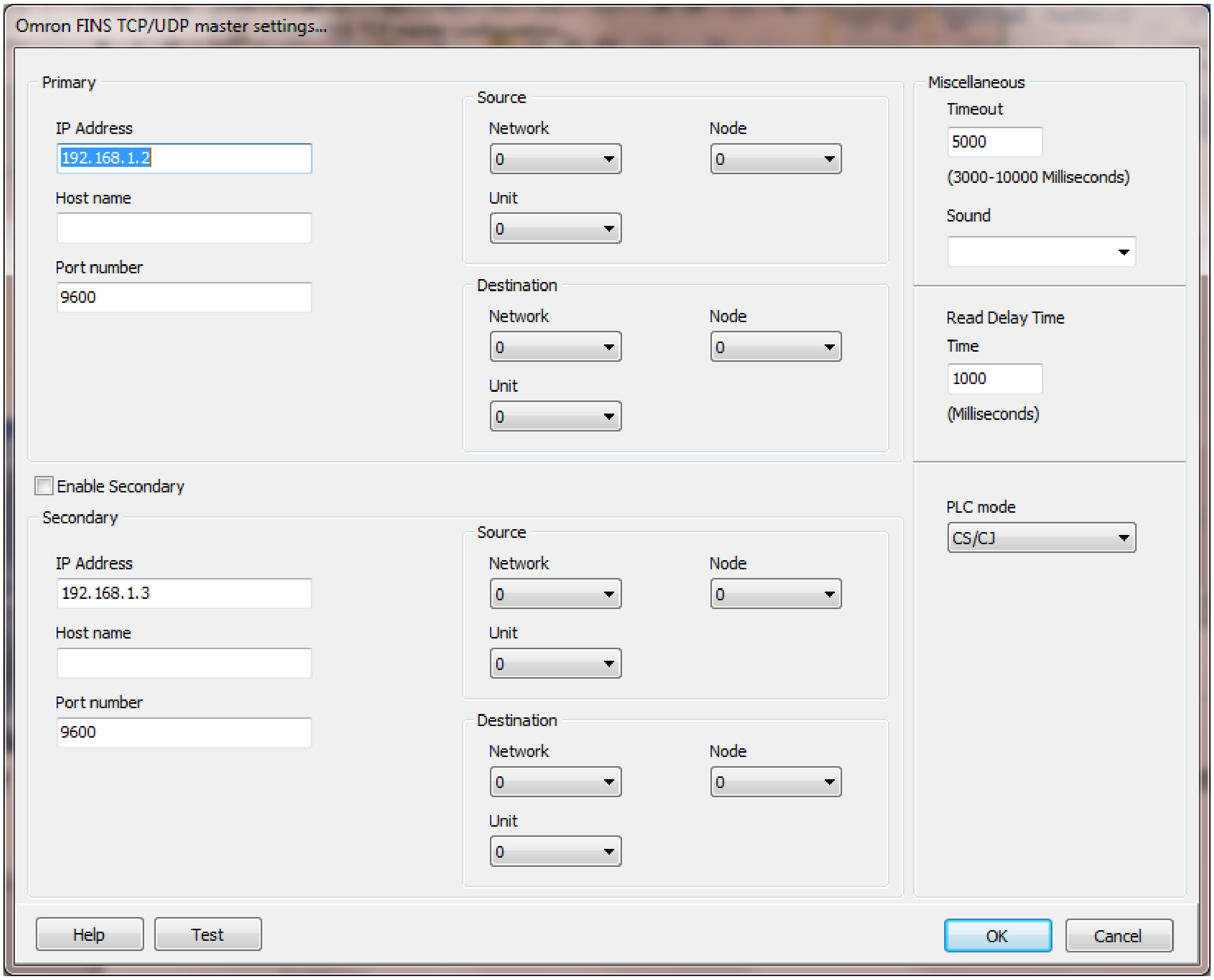

Omron FINS UDP master configuration...
Name
Type
Settings
Reads
Omron-UDP-1
Omron FINS UDP
Edit
Edit
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Omron FINS UDP master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an Omron FINS UDP master object select the "Delete" button.

Settings



Omron FINS TCP/UDP master settings...

Primary

IP Address: 192.168.1.2
Host name:
Port number: 9600

Source
Network: 0
Node: 0
Unit: 0

Destination
Network: 0
Node: 0
Unit: 0

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time
Time: 1000
(Milliseconds)

☐ Enable Secondary

Secondary

IP Address: 192.168.1.3
Host name:
Port number: 9600

Source
Network: 0
Node: 0
Unit: 0

Destination
Network: 0
Node: 0
Unit: 0

PLC mode: CS/CJ

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second com port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary com port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Source/Destination

Network address

Node number

The node is normally the same as the last digit of the IP address. Some devices allow zero (0) for automatic node assignment. The HMI uses the node value returned with the connection handshake.

Unit number

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

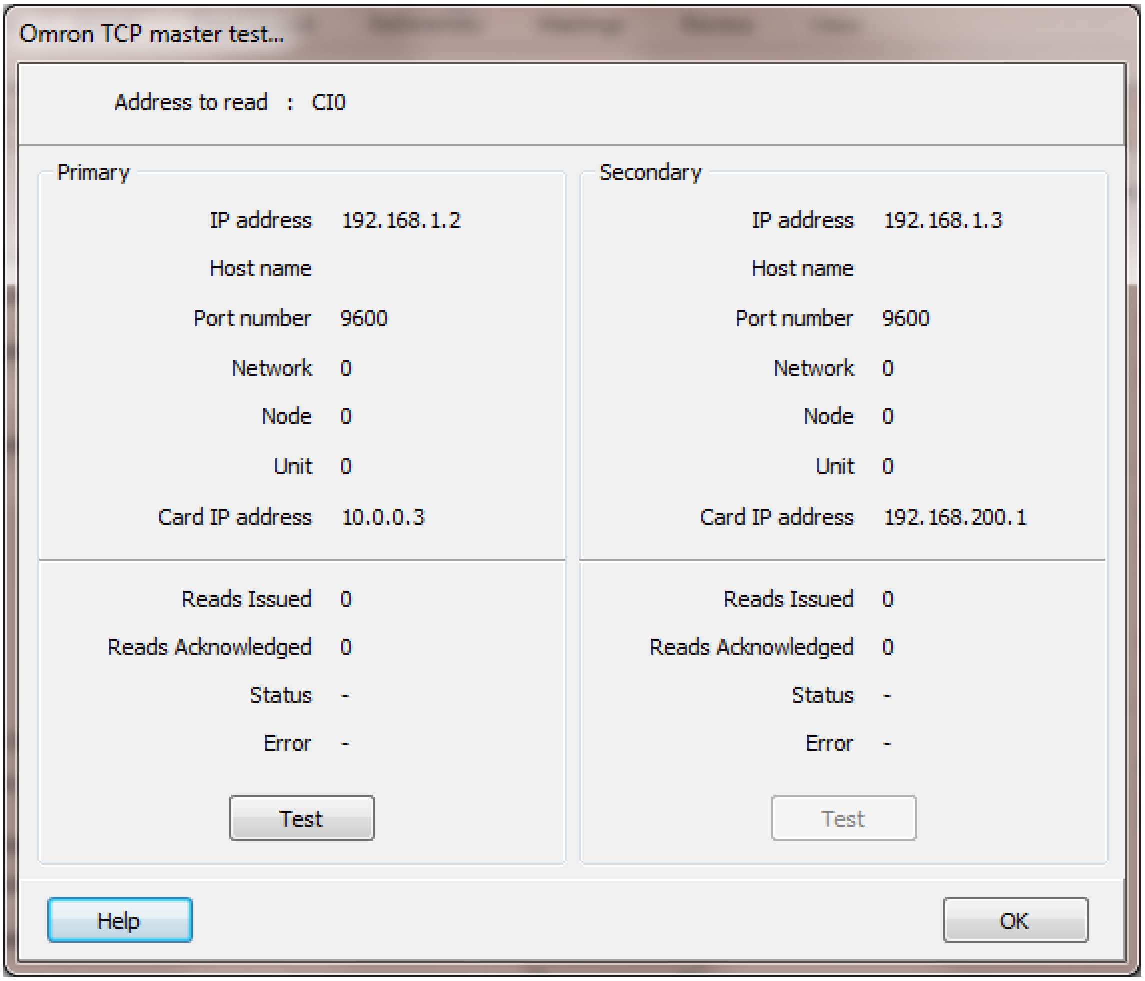
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

PLC mode

The driver supports 'C', 'CV' and 'CS/CJ' modes.

Test button



Address to read : CI0

Primary

IP address 192.168.1.2
Host name
Port number 9600
Network 0
Node 0
Unit 0
Card IP address 10.0.0.3

Reads Issued 0
Reads Acknowledged 0
Status -
Error -

Secondary

IP address 192.168.1.3
Host name
Port number 9600
Network 0
Node 0
Unit 0
Card IP address 192.168.200.1

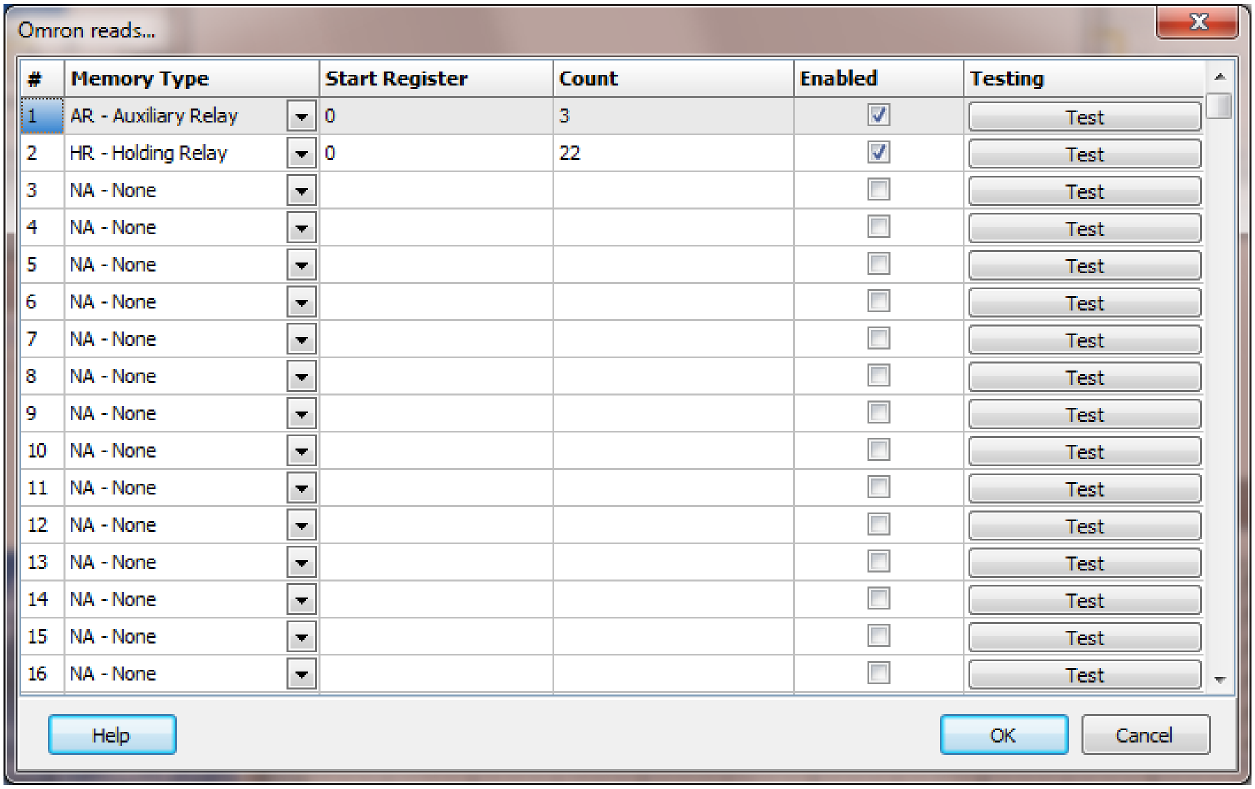
Reads Issued 0
Reads Acknowledged 0
Status -
Error -

When the test button is selected the program will send a read request to read one word starting at CIO 0.

The program will attempt to use the communication parameters configured.

If a host name is supplied the IP address is ignored.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	AR - Auxiliary Relay	0	3	☑	Test
2	HR - Holding Relay	0	22	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

The HMI uses the following addressing for access to the data in the slave. All values are in decimal.

Register Type

Register Name	Prefix	Examples	Data Type
Action Flags	AC	ACxxx	Boolean
Auxiliary Area	A	Axxx, Axxx.yy	Word, double word, float, Boolean
Auxiliary Relay	AR	ARxxx, ARxxx.yy	Word, double word, float, Boolean
Bus Link	G	Gxxx, Gxxx.yy	Word, double word, float, Boolean
Core I/O Area	CIO	CIOxxx, CIOxxx.yy	Word, double word, float, Boolean
Counter	C	Cxxx	Boolean
Counter PV	CV	CVxxx	Word
Data Memory	DM	DMxxx, DMxxx.yy	Word, double word, float, Boolean
Data Register	DR	DRxxx, DRxxx.yy	Word, double word, float, Boolean
Expansion Data Memory	E	Eaa:xxx, Eaa:xxx.yy	Word, double word, float, Boolean
Holding Relay	HR	HRxxx, HRxxx.yy	Word, double word, float, Boolean
Index Register	IR	IRxxx, IRxxx.yy	Word, double word, float, Boolean
Link Relay	LR	LRxxx, LRxxx.yy	Word, double word, float, Boolean
Step Timer	ST	STxxx	Boolean

Step Timer PV	SV	SVxxx	Word
Task Flag	TK	TKxxx.yy	Boolean
Temporary Relay	TR	TRxxx, TRxxx.yy	Word, double word, float, Boolean
Timer	T	Txxx	Boolean
Timer PV	TV	TVxxx	Word
Transition Area	TN	TNxxx	Boolean
Work Area	WR	WRxxx, WRxxx.yy	Word, double word, float, Boolean

Notes:
1. Not all devices support all addressing types, register types or PLC mode.
2. Omron does not provide for single bit writes in some register types e.g. Data memory. A bit write will set the desired bit and clear all other bits in the register. Only using the true state for commands and grouping all commands in a word or words not containing status bits overcomes this limitation. Index register does not support bit writes.
3. Each bit reference must use 2 decimal places. For bits 0 to 9 use a leading 0. i.e. 01, 02, 09

Start Register

The starting register to read. This is the word address of the memory area.

Count

The number of registers to read for the request in decimal. Each register is 16 bits. The protocol has a maximum of 29 words of data per request.

The timer/counter state is limited to 3 words (48 bits). Each state bit is returned as one byte.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string. See 'Testing error message 'below.

Read configuration error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

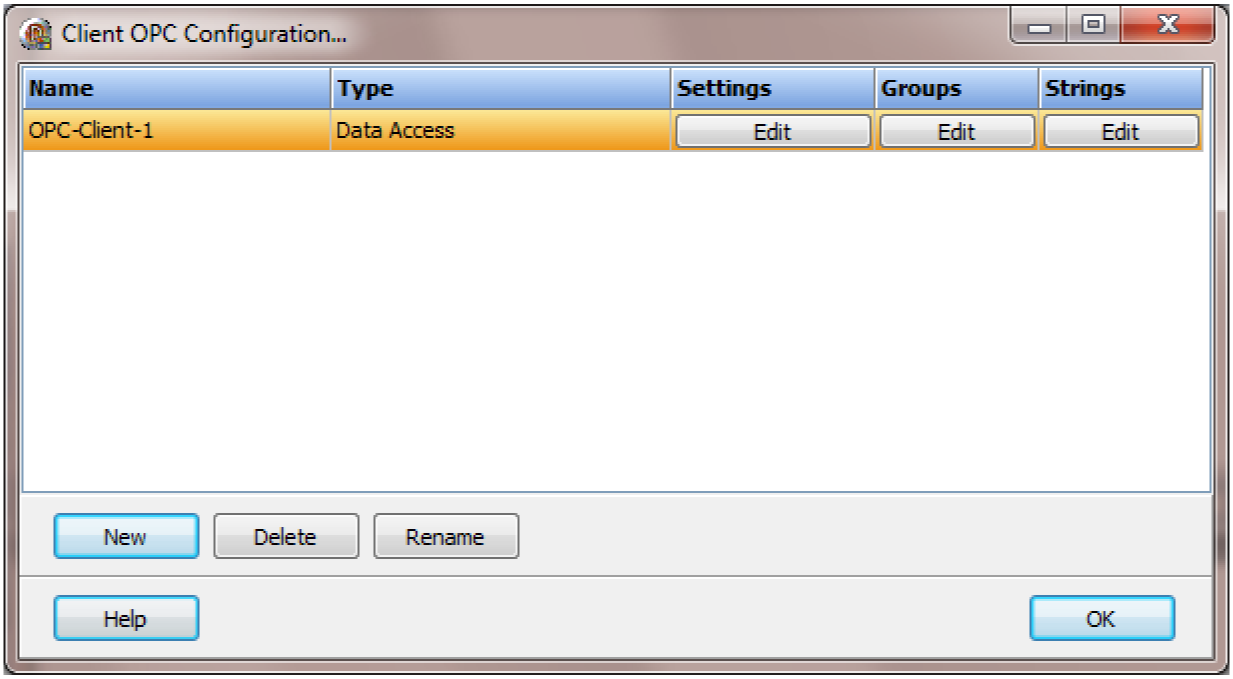
Testing error messages

Service was interrupted
Local node not part of Network
Token time-out, node number too large
Number of transmit retries exceeded
Maximum number of frames exceeded
Node number setting error (range)
Node number duplication error
Destination node not part of Network
No node with the specified node number
Third node not part of Network/Broadcasting was specified
Busy error, destination node busy
Response time-out, message packet was corrupted by noise/Response time-out, response watchdog timer interval too short/Frame lost in transmission
Error occurred in the communications controller, ERC indicator is lit
CPU error occurred in the PC at destination node
A controller error has prevented normal response from being returned.
Node number setting error
An undefined command has been used.
Cannot process command because the specified unit model or version is wrong.
Destination node number is not set in the routing table.
Routing table isn't registered.
Routing table error
The maximum number of relay nodes (2) was exceeded in the command.
The command is longer than the max. permissible length.
The command is shorter than min. permissible length.
The designated number of data items differs from the actual number.
An incorrect command format has been used.
An incorrect header has been used. (The local node's relay table or relay node's local network table is wrong.)
A correct memory area code has not been used or Expansion Data Memory is not available.

The access size specified in the command is wrong, or the first address is an odd number.
The first address is in an inaccessible area.
The end of specified word range exceeds the acceptable range.
A non-existent program no. has been specified.
The sizes of data items in the command block are wrong.
The IOM break function cannot be executed because it is already being executed.
The response block is longer than the max. permissible length.
An incorrect parameter code has been specified.
The data is protected. An attempt was made to download a file that is being uploaded.
The registered table does not exist or is incorrect./Too many files open.
The corresponding search data does not exist.
A non-existing program no. has been specified.
A non-existing file has been specified.
A verification error has occurred.
The specified area is read-only or is write-protected.
The data is protected. An attempt was made to simultaneously download and upload a file. The data link table cannot be written manual because it is set for automatic generation.
The number of files exceeds the maximum permissible. Too many files open.
A non-existing program no. has been specified.
A non-existent file has been specified.
The specified file already exists.
Data cannot be changed.
The mode is wrong (executing). Data links are active.
The mode is wrong (stopped). Data links are active.
The PC is in the PROGRAM mode.
The PC is in the DEBUG mode.
The PC is in the MONITOR mode.
The PC is in the RUN mode.
The specified node is not the control node.
The mode is wrong and the step cannot be executed.
A file device does not exist where specified.
The specified memory does not exist.
The data link table either hasn't been created or is incorrect.

OPC CLIENTS

Each OPC Client object is listed in the window.


Client OPC Configuration...
New
Delete
Rename
Help
OK

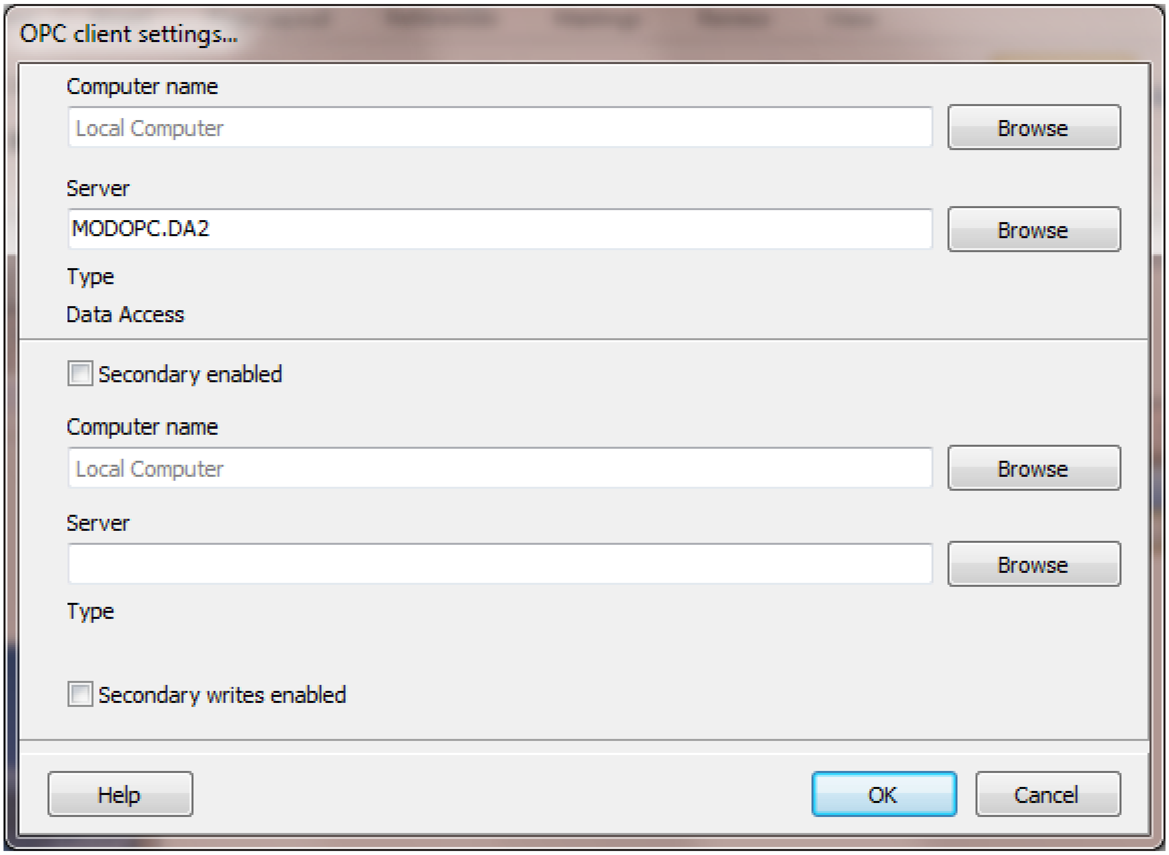
Name	Type	Settings	Groups	Strings
OPC-Client-1	Data Access	Edit	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible OPC Client master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an OPC Client master object select the "Delete" button.

Settings



OPC client settings...

Computer name: Local Computer

Server: MODOPC.DA2

Type: Data Access

☐ Secondary enabled

Computer name: Local Computer

Server:

Type:

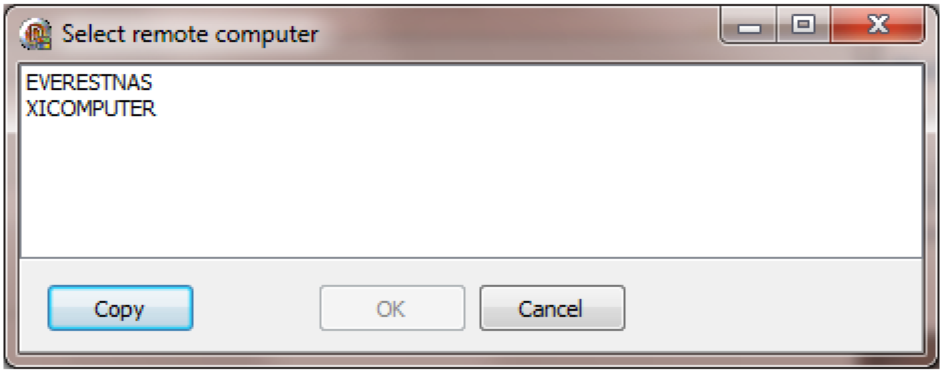
☐ Secondary writes enabled

Computer Name

If the OPC server is running on the same computer as HMISYS then this field remains "Local Computer". If the OPC server is running on a remote computer enter the name of the computer in this field.

Browse

Selecting the "Browse" button will display a dialog allowing for the browsing of the network. Depending on network configuration, size, speed, etc., it can take several minutes to open individual branches. Note: Selecting the browse command can take many minutes to search the network.



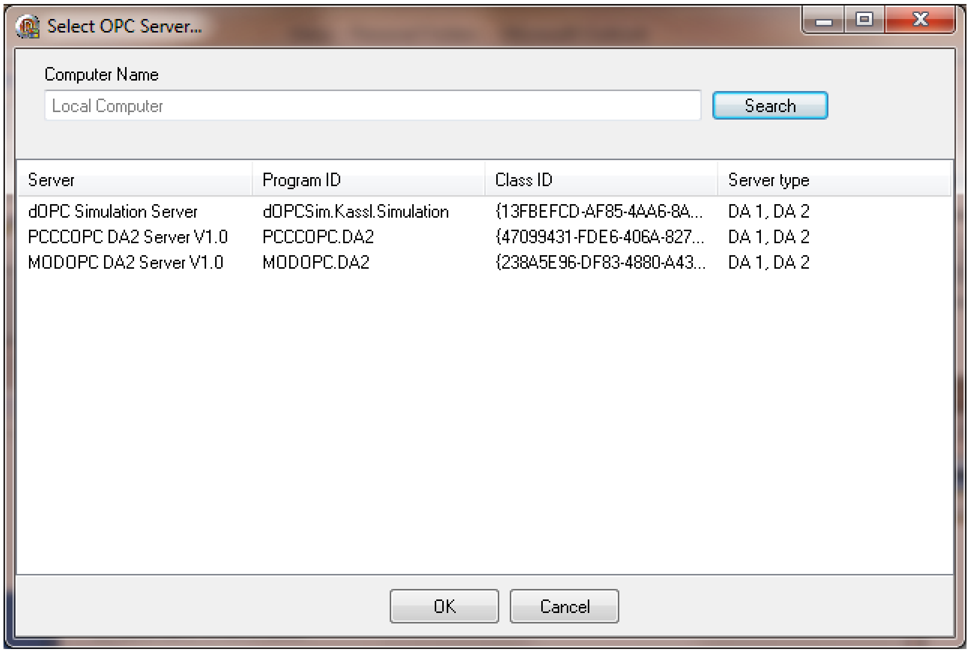
EVERESTNAS
XICOMPUTER

Server

This is the name of the OPC server. It can be a Data Access 1.x, Data Access 2.x, Data Access 3.x or Data Access XML 1.x.

Browse

Selecting the "Browse" button will display a dialog allowing for the browsing of the available servers on the computer.



Computer Name: Local Computer

Server	Program ID	Class ID	Server type
dOPC Simulation Server	dOPCSim.Kassl.Simulation	{13FBEFCD-AF85-4AA6-8A...	DA 1, DA 2
PCCCOPC DA2 Server V1.0	PCCCOPC.DA2	{47099431-FDE6-406A-827...	DA 1, DA 2
MODOPC DA2 Server V1.0	MODOPC.DA2	{238A5E96-DF83-4880-A43...	DA 1, DA 2

Type

The type of server selected.

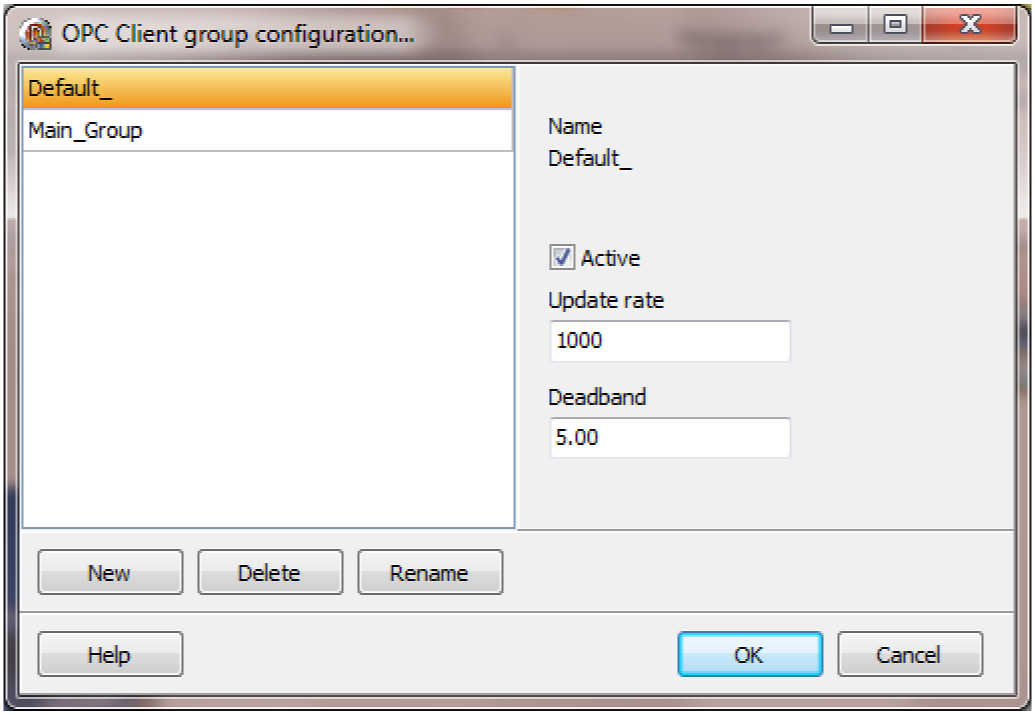
Secondary Enabled

A connection to a second OPC server can be configured. This connection will operate in "Hot Standby". When runtime monitoring is initiated the groups and items configured will be added to the secondary server. When the secondary server reports a data change and the primary server is connected the data is discarded. If the primary server is not connected the data will be processed.

Secondary Writes Enabled

When the primary server is connected and a write command is sent to the primary server if this attribute is enabled a write of the same data point and value is sent to the secondary server. If the primary server is disconnected all writes are transmitted to the secondary server regardless of this configuration attribute.

Groups



Default_
Main_Group

Name
Default_

☑ Active

Update rate
1000

Deadband
5.00

Active

Sets the active state of the group at runtime start. Control at runtime is provided via scripting.

Update Rate

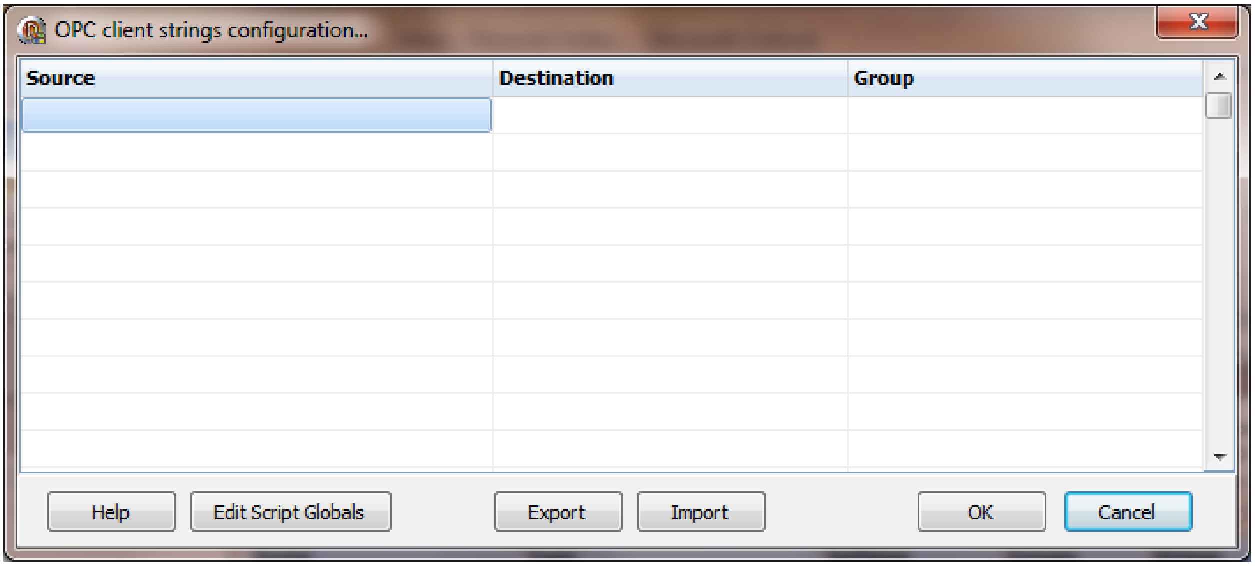
All the update rate indicates is that (a) callbacks from the server should happen no faster than this and (b) the cache should be updated at least this rate.

The update rate is a "request" from the client. The server should respond with an update rate that is as close as possible to that requested.

Deadband

Deadband only applies to analog type points. If the change between the last cached value and the current value is greater than the deadband the cache will be updated.

Strings



Strings are not regular points. They do not have alarms, printing, etc. Strings may be displayed in any window via the "Script Global" animation. Any other actions, parsing, comparing, etc. must be done in scripts.

Source

This is the OPC in the PLC. It must be a valid tagname with a datatype "string".

Destination (optional)

If desired, select a script global location and the string will be copied to the location when the string value is returned by the external device. If this option is used or not the string may still be accessed via the "StringGet" and "StringSet" script commands. If this is configured and access to the string, in a script, is desired use the "GlobalGet" or "StringGet" to copy the string. The format of the destination is: <section>.<name>.

Group

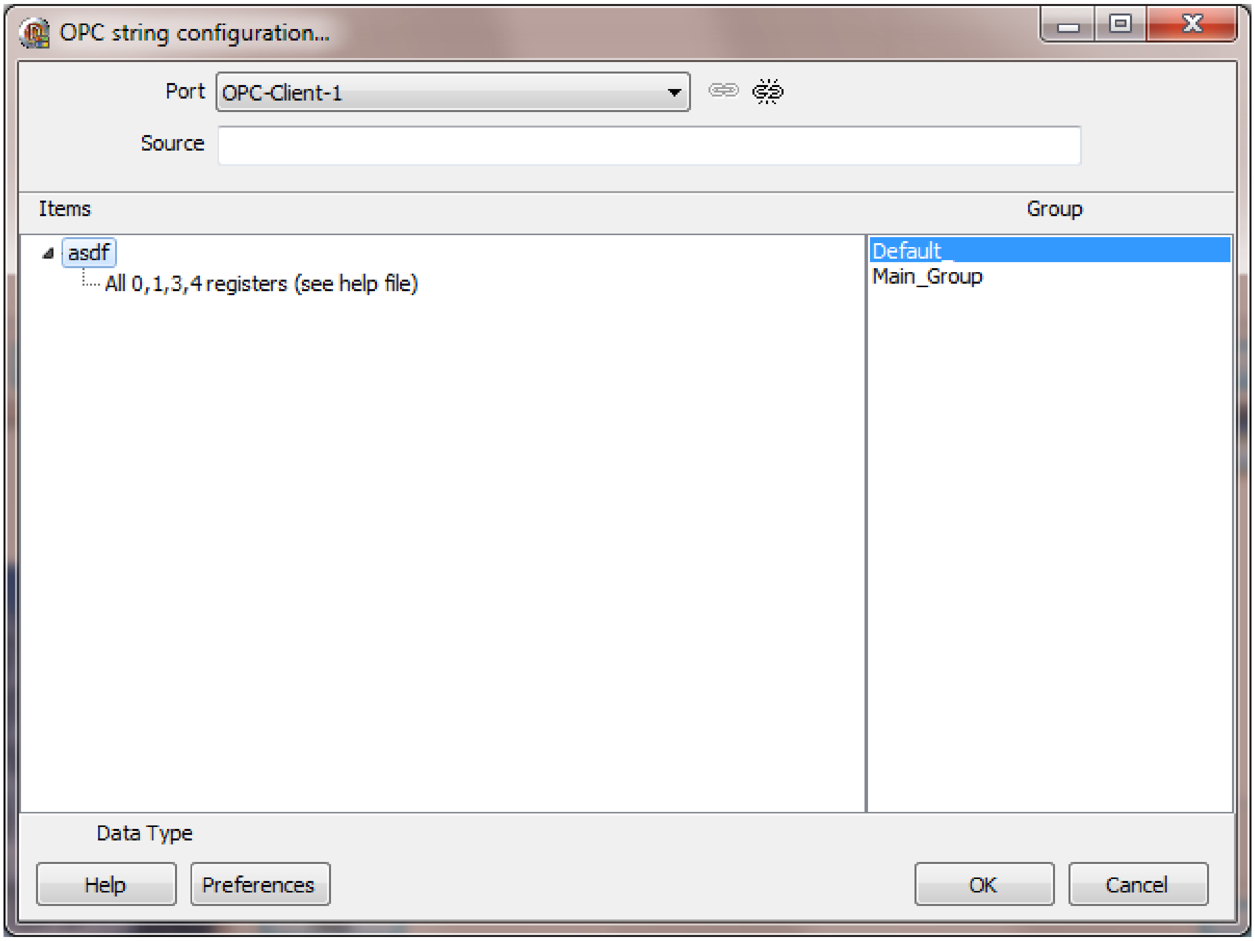
Each OPC string must belong to a group. This is a group in the server. Select which group this string is a member.

Export

This is used to export the configuration to an Excel worksheet.

Import

This is used to import string configurations from an Excel worksheet. The contents of the grid are completely replaced by the contents of the file.



Port OPC-Client-1

Source

asdf
All 0,1,3,4 registers (see help file)

Default_
Main_Group

Port

This is the OPC port assigned to the string.

Next to the "Port" combo box are two small icons. The first one is to connect to the server selected in the combo box and the second is to disconnect from the server if connected. Depending on the preferences connection to the server may occur when the window is opened and disconnected when the window is closed.

Source

The item ID in the server. The is the full item ID used to identify what item in the server provides the data.

Items

When a connection to the server is established a command to browse all items in the server will be executed. The result will be displayed in the items tree view.

Group

Each OPC point must belong to a group. This is a group in the server. Select which group this point is a member.

Data Type

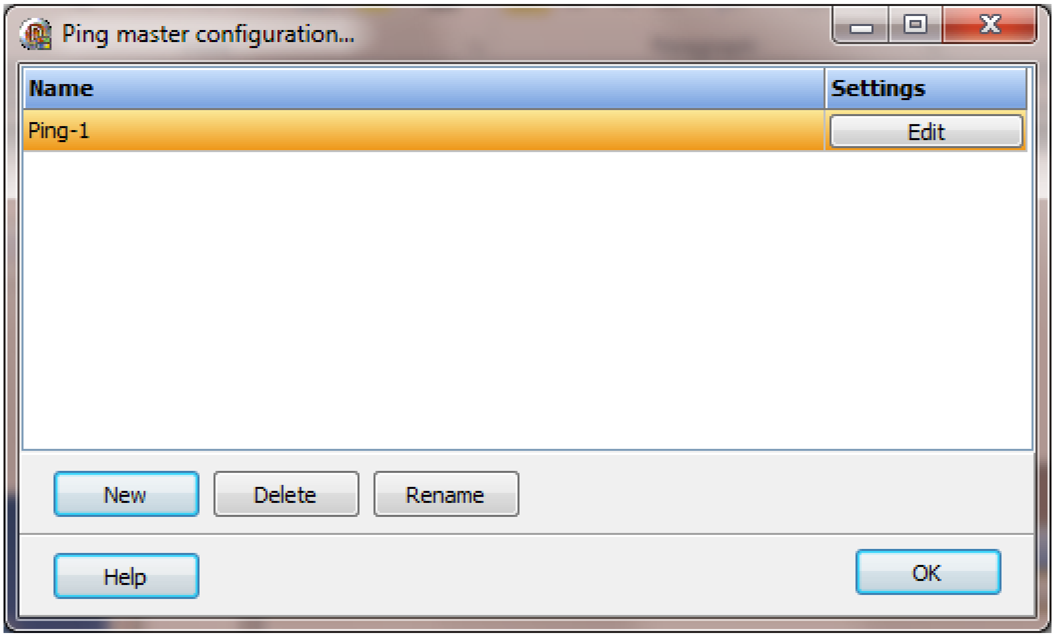
This shows the data type of the item selected when the mouse button is clicked on an item in the items tree view. Only string types are allowed.

Preferences

See OPC Client Configuration Preferences.

PING

Each Ping object is listed in the window.

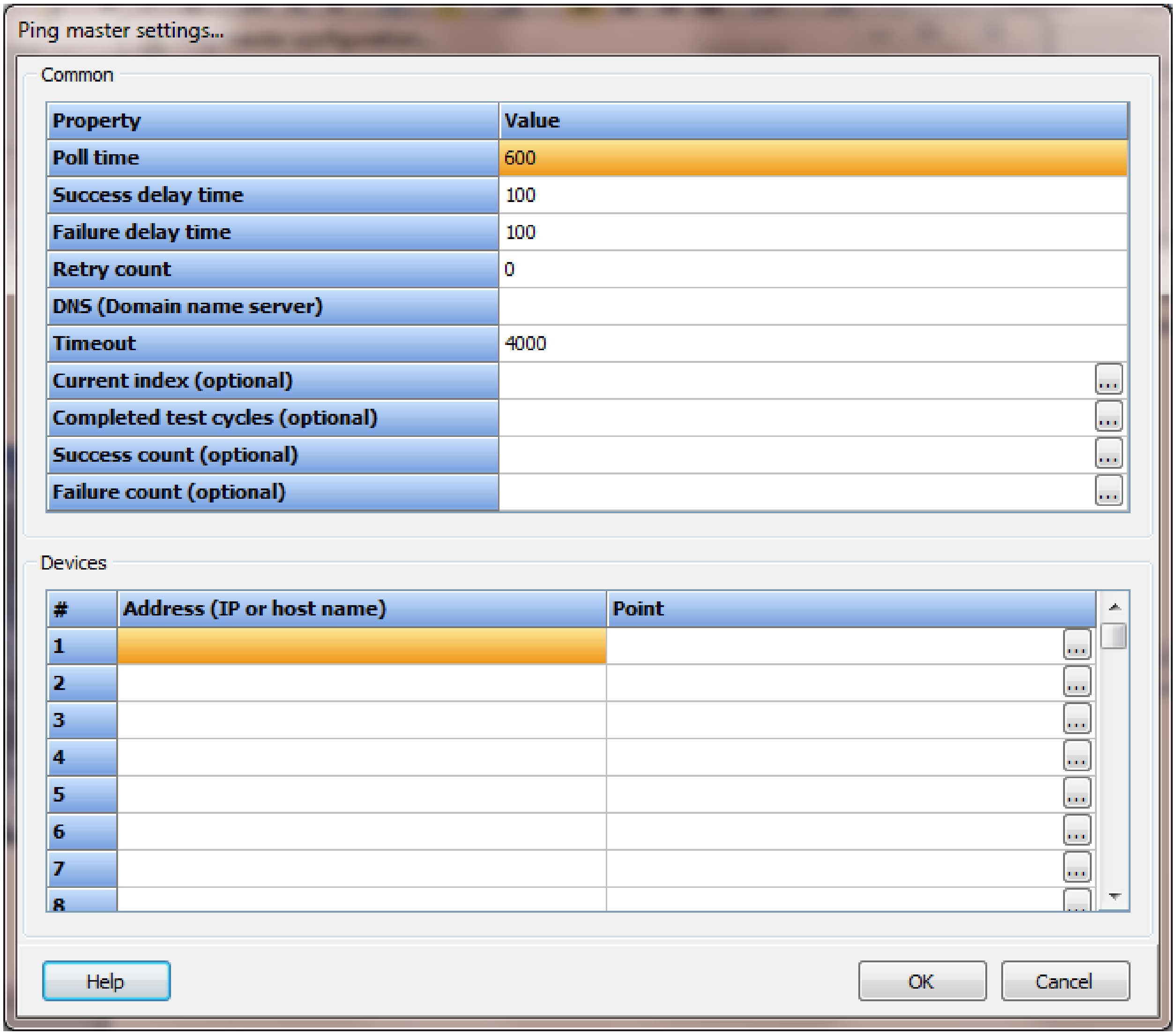

Ping master configuration...
Name
Settings
Ping-1
Edit
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Ping master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Ping master object select the "Delete" button.

Settings



Property	Value
Poll time	600
Success delay time	100
Failure delay time	100
Retry count	0
DNS (Domain name server)	
Timeout	4000
Current index (optional)	
Completed test cycles (optional)	
Success count (optional)	
Failure count (optional)	

#	Address (IP or host name)	Point
1		
2		
3		
4		
5		
6		
7		
8		

Notes:

1) It is recommend to **not** use any point that references an external device for the optional counter fields OR the required devices "point" fields. Depending on the timer settings, the pinging logic can execute very fast and fill up the write buffer of the port or overwhelm external devices with write commands. Use host analog and host digital points.

Common

Poll time

On monitoring start the program will begin "pinging" all the devices in the order configured. After the last device in the list is tested, this value is the amount of time (seconds) to wait before restarting the testing process from the first device in the list. (0 - 100,000)

Success delay time

After a successful test of a device, this is the amount of time to wait (milliseconds) before testing the next device. (0 - 100,000)

Failure delay time

After a failure testing a device, this is the amount of time to wait (milliseconds) before testing the next device. (0 - 100,000)

Retry count

This is the number of times to retry (after the initial failure) the test before marking the test of the device/address a failure. (0-10)

DNS (Domain name server)

The name or address of the DNS used to resolve device addresses that contain a host name and not an IP address. If all the device addresses are IP address (e.g. 192.168.1.1) this field is not utilized.

Notes:
1) If using a URL in any device address, the DNS field must be an IP address or the name of the server.
2) To determine the DNS for the computer;
   A) Launch a command window.
   B) At the prompt type “nslookup” and press the 'Enter/Return' key.
   C) The response will be: Default Server: <server name> Address: <IP address>
   D) Type the IP address in the DNS field of the HMI.
   E) Close the command window.
3) The device digital point will be set false on a DNS lookup failure.

Timeout

The maximum time to wait (milliseconds) for a response to the device ping. A router could return a failure message before the maximum time is reached. (0 - 100,000)
Note: A timeout less than 4000 milliseconds is not recommended.

Current Index (optional)

An analog point indicating the current device under ping test. A value of 0 (zero) indicates the logic is waiting for the poll timer to complete.

Completed test cycles (optional)

This value indicates the count of times all address have been tested. The "Success" and "Failure" count will be equal to the total device count after one complete cycle of the device list. After the first complete scan of all the addresses and when this value rolls over, it will roll over to 1 (one). 0 (zero) can be used as a first scan indicator. (0 - 4,294,967,295)

Success count (optional)

This value indicates the count of addresses that passed the ping test.

Failure count (optional)

This value indicates the count of addresses that failed the ping test.

Devices

Address

The address can be an IP address or a host name.

Point

A digital point that stores the result of the test. (The item ID is the process variable digital.)

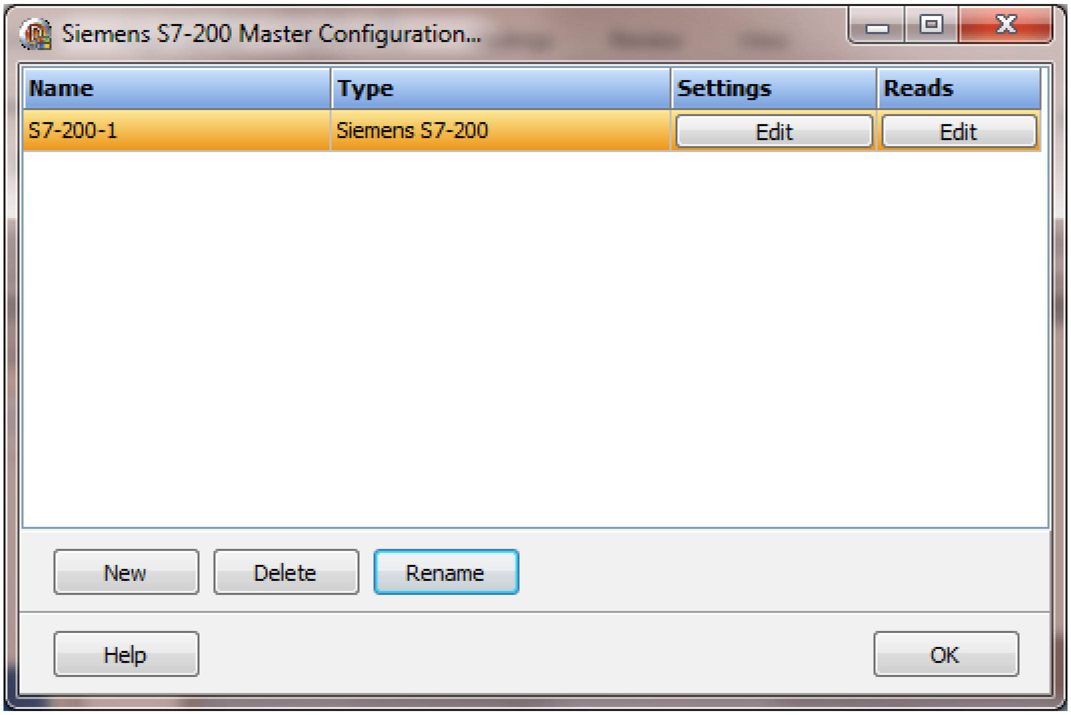
If the value is false:
A ping test has not been performed (the list is on the first scan).
The ping test was successful.

If the value is true, the ping test failed.

Note: Set the digital host initial value to true. Then using the "falling" alarm to signal a ping failure on the first and subsequent test.

Siemens S7-200 (PPI) Serial

Each S7-200 master object is listed in the window.


Siemens S7-200 Master Configuration...
New
Delete
Rename
Help
OK

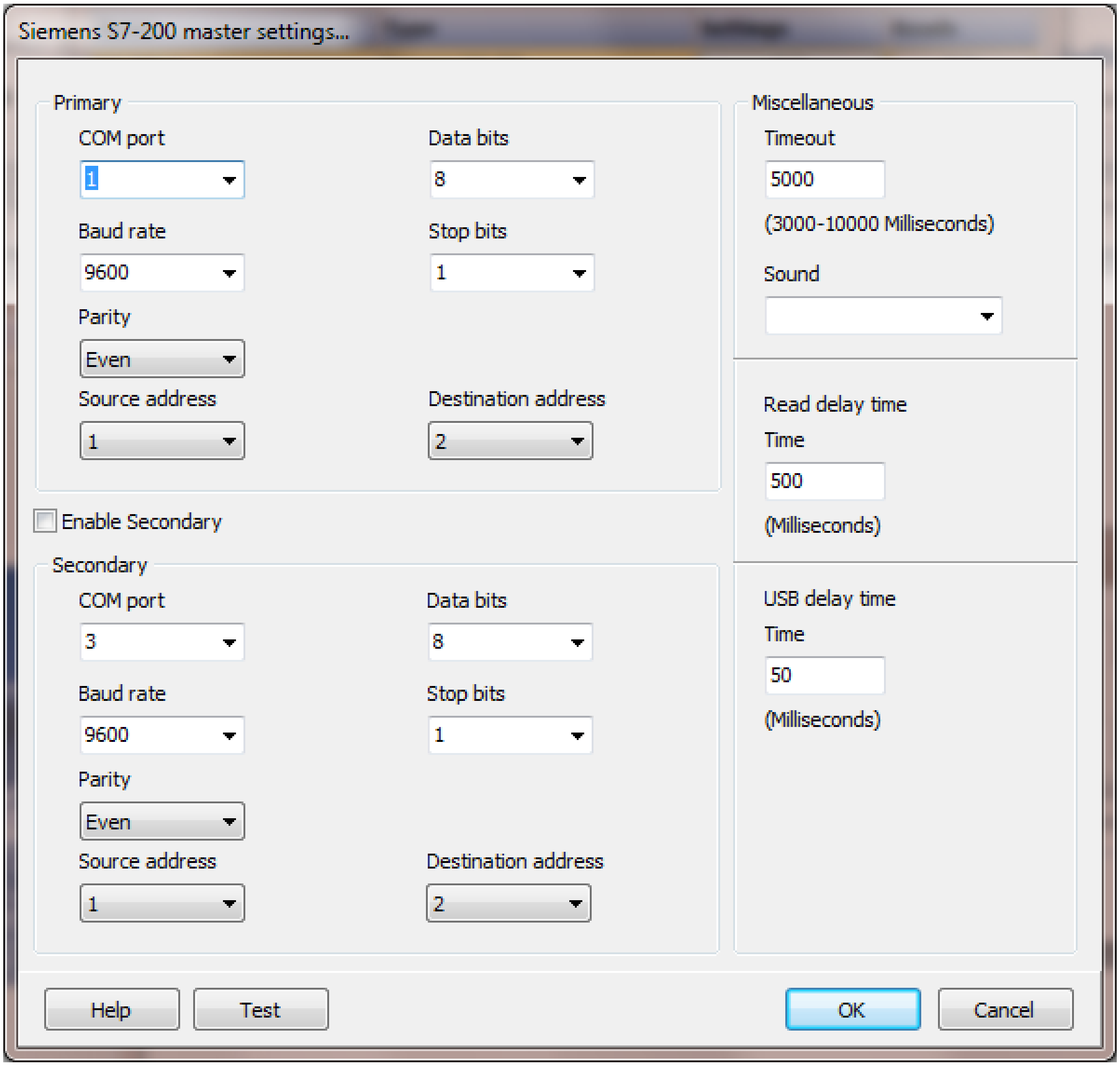
Name	Type	Settings	Reads
S7-200-1	Siemens S7-200	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible S7-200 master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete an S7-200 master object select the "Delete" button.

Settings



Siemens S7-200 master settings...

Primary
COM port: 1
Data bits: 8
Baud rate: 9600
Stop bits: 1
Parity: Even
Source address: 1
Destination address: 2

☐ Enable Secondary

Secondary
COM port: 3
Data bits: 8
Baud rate: 9600
Stop bits: 1
Parity: Even
Source address: 1
Destination address: 2

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read delay time
Time: 500
(Milliseconds)

USB delay time
Time: 50
(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary

communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Destination Address

The address of the slave device.

Source Address

The address of the HMI program.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

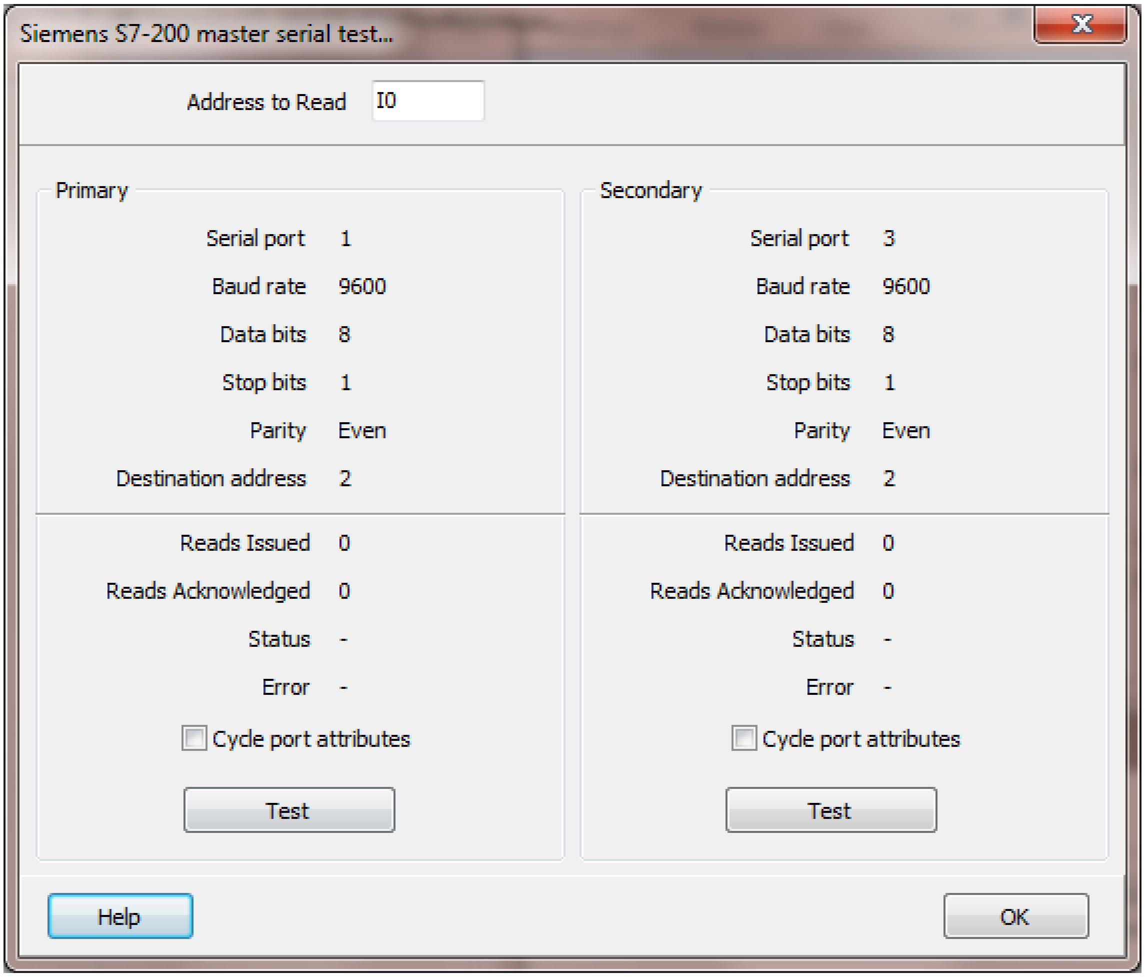
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

USB Delay Time

In testing it was found that the PC would receive a packet and transmit the response faster than the converter/PLC could handle it. This was observed to occur most often when a USB to serial converter was used. It has been witnessed using a conventional serial port. A value of zero (0) will disable the delay. The smaller the value the faster the turnaround time.

Test button



Siemens S7-200 master serial test...

Address to Read I0

Primary

Serial port 1
Baud rate 9600
Data bits 8
Stop bits 1
Parity Even
Destination address 2
Reads Issued 0
Reads Acknowledged 0
Status -
Error -
☐ Cycle port attributes

Secondary

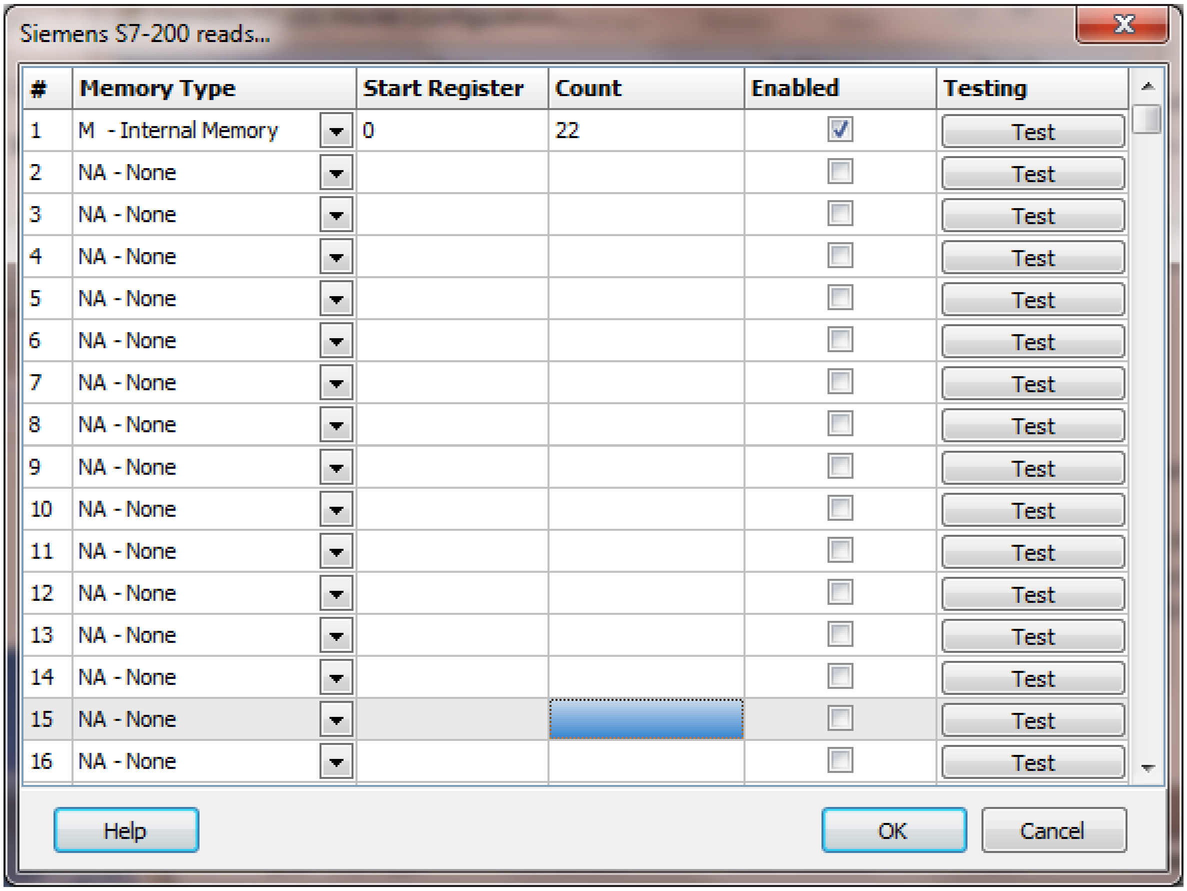
Serial port 3
Baud rate 9600
Data bits 8
Stop bits 1
Parity Even
Destination address 2
Reads Issued 0
Reads Acknowledged 0
Status -
Error -
☐ Cycle port attributes

When the test button is selected the program will attempt to read one element of data from the device at the address entered.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



Siemens S7-200 reads...

#	Memory Type	Start Register	Count	Enabled	Testing
1	M - Internal Memory	0	22	☑	Test
2	NA - None			☐	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

Register Type

The following addresses are used for access to the data in the slave.

Register Type	**Prefix**	**Information**	
Inputs	I, IW, ID	I0.7	Bit 7 of byte 0
		I1.0	Bit 0 of byte 1
		I5	Byte 5
		IW4	Word 4
		ID8	Double word 8
Outputs	Q, QW, QD	Q0.1	Bit 1 of byte 0
		Q1.3	Bit 3 of byte 1

		Q9	Byte 9
		QW6	Word 6
		QD12	Double word 13
Internal Memory	M, MW, MD	M0.1	Bit 1 of byte 0
		M1.3	Bit 3 of byte 1
		M14	Byte 14
		MW6	Word 6
		MD12	Double word 13
Special Memory	SM, SMW, SMD	SM0.1	Bit 1 of byte 0
		SM1.3	Bit 3 of byte 1
		SM3	Byte 3
		SMW6	Word 6
		SMD12	Double word 13
Variable	V, VW, VD	V0.1	Bit 1 of byte 0
		V1.3	Bit 3 of byte 1
		V222	Byte 222
		VW6	Word 6
		VD12	Double word 13
Timer	T	T0	Timer 0
		T12	Timer 12

If the point type is digital the address is the done bit of the timer.
If the point type is analog the address is the word value of the timer accumulator.

Counter	C	C1	Counter 1
		C4	Counter 4

If the point type is digital the address is the done bit of the counter.
If the point type is analog the address is the word value of the counter accumulator.

Analog Input	AI	AI4	Analog input 4
		AI0	Analog input 0

Analog inputs are word values.

Analog Output **Write Only**	AQ	AQ4	Analog output 4
		AQ0	Analog output 0

Analog outputs are word values.

Caution: Siemens addressing has overlap.
IB0 is byte 0.
IB1 is byte 1.
IW0 is byte 0 and 1.
IW1 is byte 1 and 2.
IW2 is byte 2 and 3.

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values. Enter the starting register value.

Count

The number of registers to read for the request. The memory type and slave device determine the maximum number of registers that can be read. The protocol has a maximum of 222 bytes of data.

Register Type	**Data Size**	**Maximum Count**
Inputs, Outputs, Internal Memory, Special Memory, Variable	Byte	222
Timer	Structure	44
Counter	Structure	74
Analog In	Word	111

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

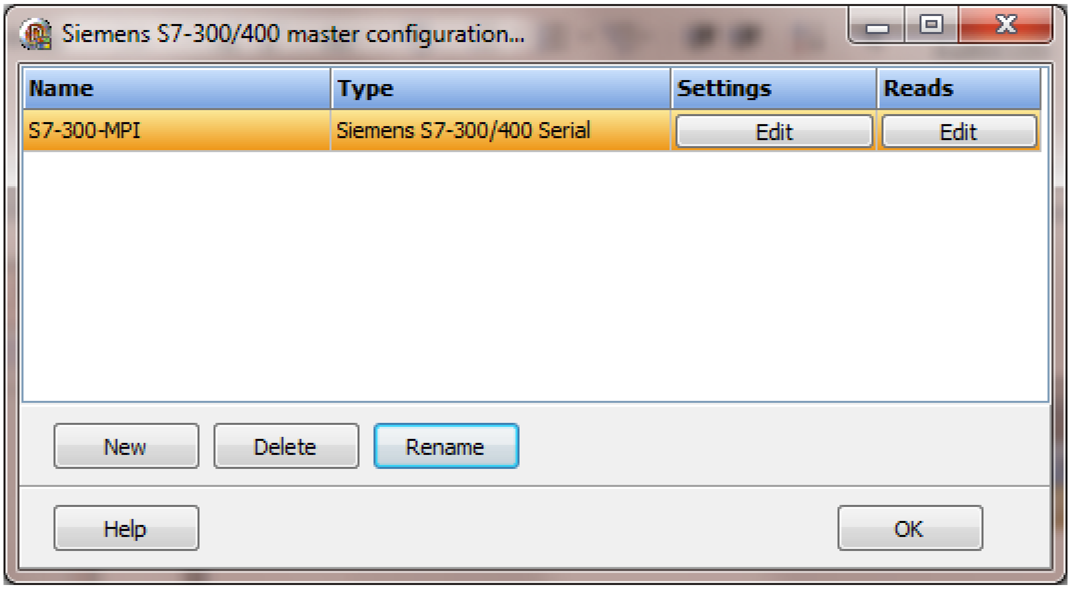
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

Siemens S7-300/400 (MPI) Serial

Each S7-300/400 master object is listed in the window.


Siemens S7-300/400 master configuration...
New
Delete
Rename
Help
OK

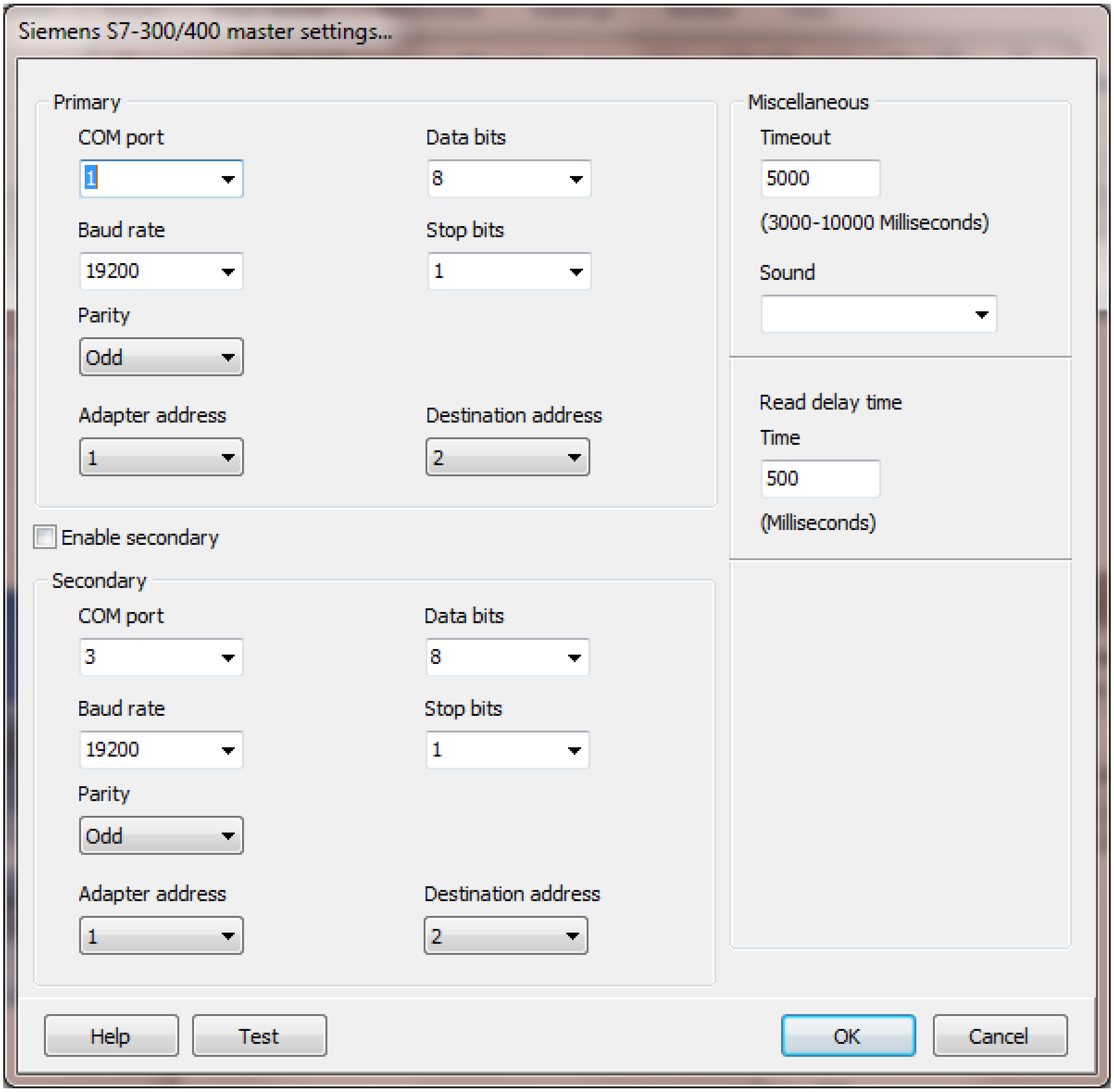
Name	Type	Settings	Reads
S7-300-MPI	Siemens S7-300/400 Serial	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an S7-300/400 master object select the "Delete" button.

Settings


Siemens S7-300/400 master settings...

Primary
COM port: 1
Data bits: 8
Baud rate: 19200
Stop bits: 1
Parity: Odd
Adapter address: 1
Destination address: 2

☐ Enable secondary

Secondary
COM port: 3
Data bits: 8
Baud rate: 19200
Stop bits: 1
Parity: Odd
Adapter address: 1
Destination address: 2

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read delay time
Time: 500
(Milliseconds)

The port has a primary port and if enabled a secondary port. Select the port attributes as is needed.

If you have a non-standard baud rate and the communication port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Enable Secondary

The "Enable Secondary" checkbox provides for a second communication port to be used as a hot backup. When in run mode the primary port is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary communication port. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary port, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary port an entry will be made in the event log and operations will return to the primary port.

Destination Address

The address of the slave device.

Source Address

The address of the HMI program.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

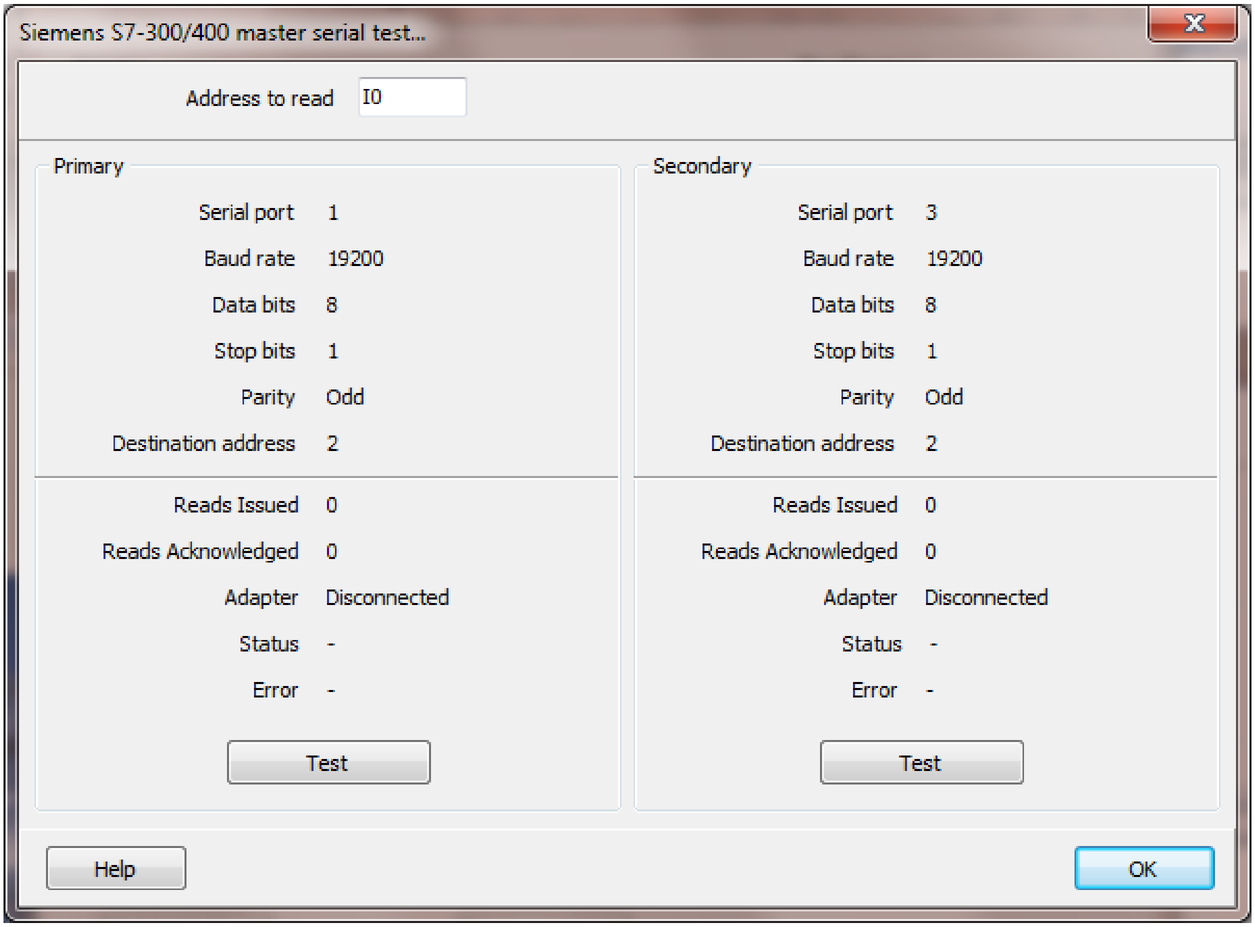
When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button



Siemens S7-300/400 master serial test...

Address to read I0

Primary

Serial port 1
Baud rate 19200
Data bits 8
Stop bits 1
Parity Odd
Destination address 2

Reads Issued 0
Reads Acknowledged 0
Adapter Disconnected
Status -
Error -

Secondary

Serial port 3
Baud rate 19200
Data bits 8
Stop bits 1
Parity Odd
Destination address 2

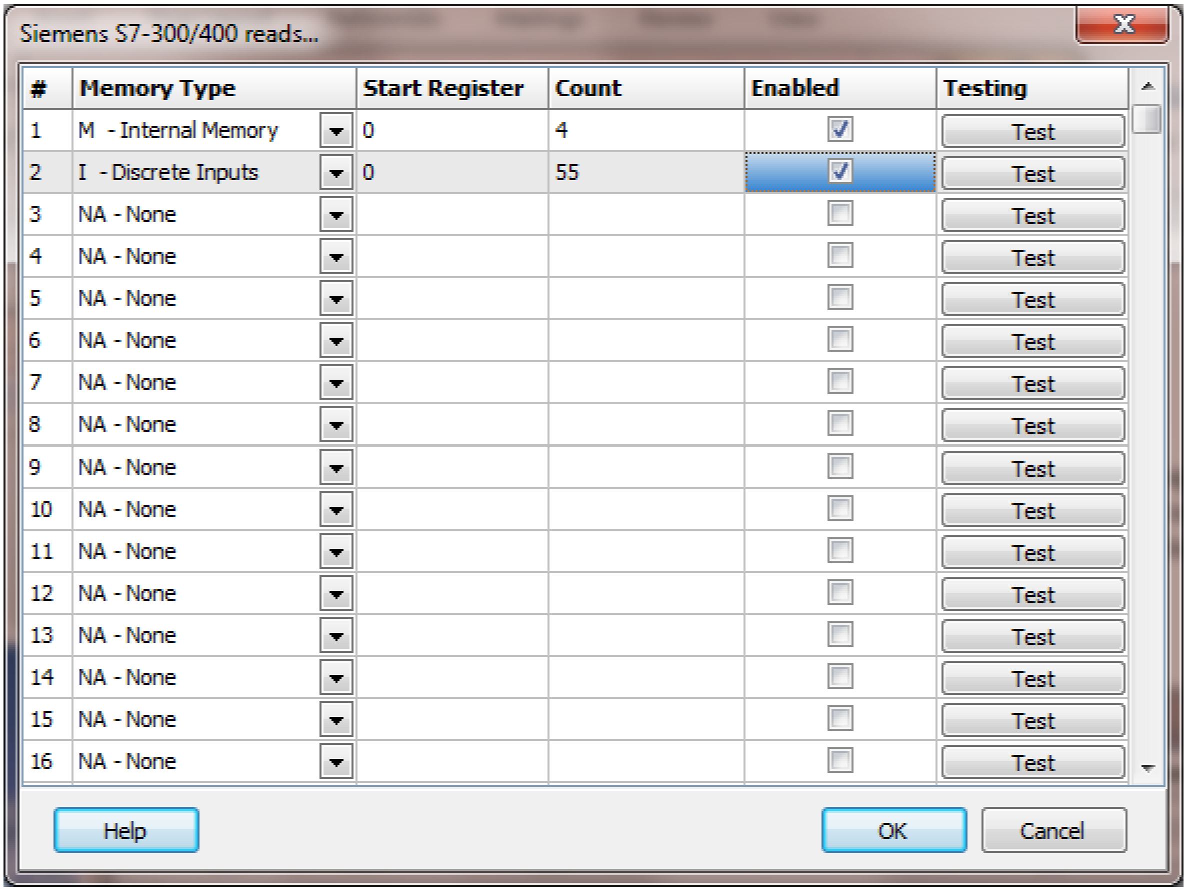
Reads Issued 0
Reads Acknowledged 0
Adapter Disconnected
Status -
Error -

When the test button is selected the program will send an "Enquire" message to the slave device.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Reads



#	Memory Type	Start Register	Count	Enabled	Testing
1	M - Internal Memory	0	4	☑	Test
2	I - Discrete Inputs	0	55	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

Register Type

The following addresses are used for access to the data in the slave.

Register Type	Prefix	Information	
Inputs	I, IW, ID	I0.7	Bit 7 of byte 0
		I1.0	Bit 0 of byte 1
		I5	Byte 5
		IW4	Word 4
		ID8	Double word 8
Outputs	Q, QW, QD	Q0.1	Bit 1 of byte 0
		Q1.3	Bit 3 of byte 1
		Q9	Byte 9
		QW6	Word 6
		QD12	Double word 13
Internal Memory	M, MW, MD	M0.1	Bit 1 of byte 0
		M1.3	Bit 3 of byte 1

		M14	Byte 14
		MW6	Word 6
		MD12	Double word 13
Timer	T	T0	Timer 0
		T12	Timer 12

If the point type is digital the address is the done bit of the timer.
If the point type is analog the address is the word value of the timer accumulator.

Counter	C	C1	Counter 1
		C4	Counter 4

If the point type is digital the address is the done bit of the counter.
If the point type is analog the address is the word value of the counter accumulator.

Caution: Siemens addressing has overlap.
IB0 is byte 0.
IB1 is byte 1.
IW0 is byte 0 and 1.
IW1 is byte 1 and 2.
IW2 is byte 2 and 3.

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values. Enter the starting register value.

Count

The number of registers to read for the request. The memory type and slave device determine the maximum number of registers that can be read. The protocol has a maximum of 222 bytes of data.

Register Type	Data Size	Maximum Count
Inputs, Outputs, Internal Memory	Byte	128
Timer	Word	111
Counter	Word	111

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

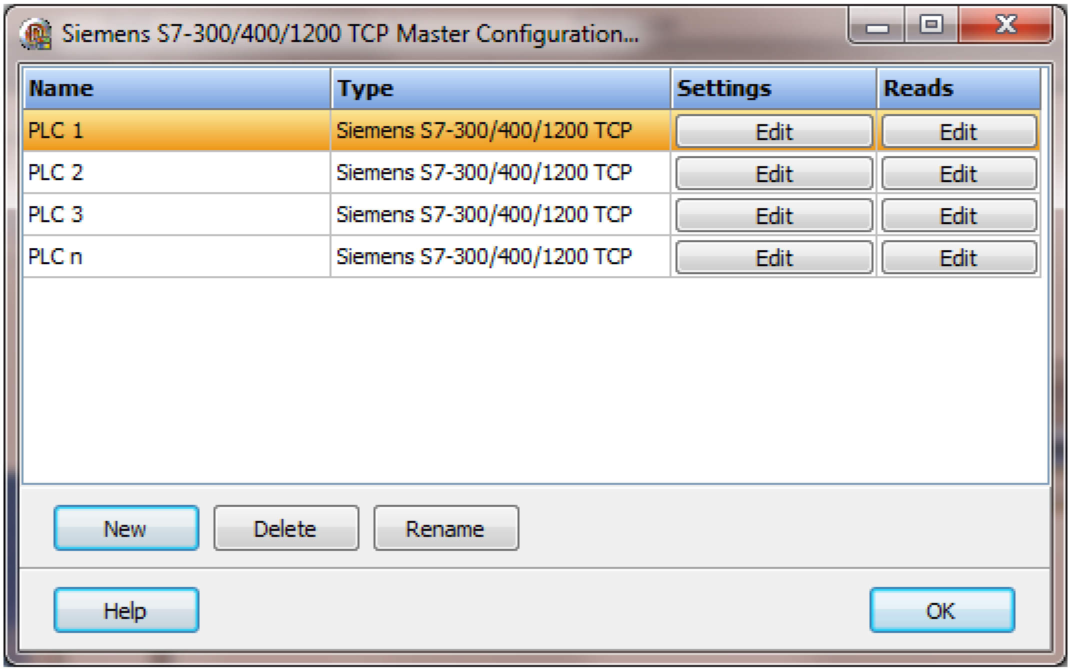
Error code	
5	The count was too large for the device.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

SIEMENS S7-300/400/1200 TCP

Each S7-300/400/1200 TCP master object is listed in the window.


Siemens S7-300/400/1200 TCP Master Configuration...
New
Delete
Rename
Help
OK

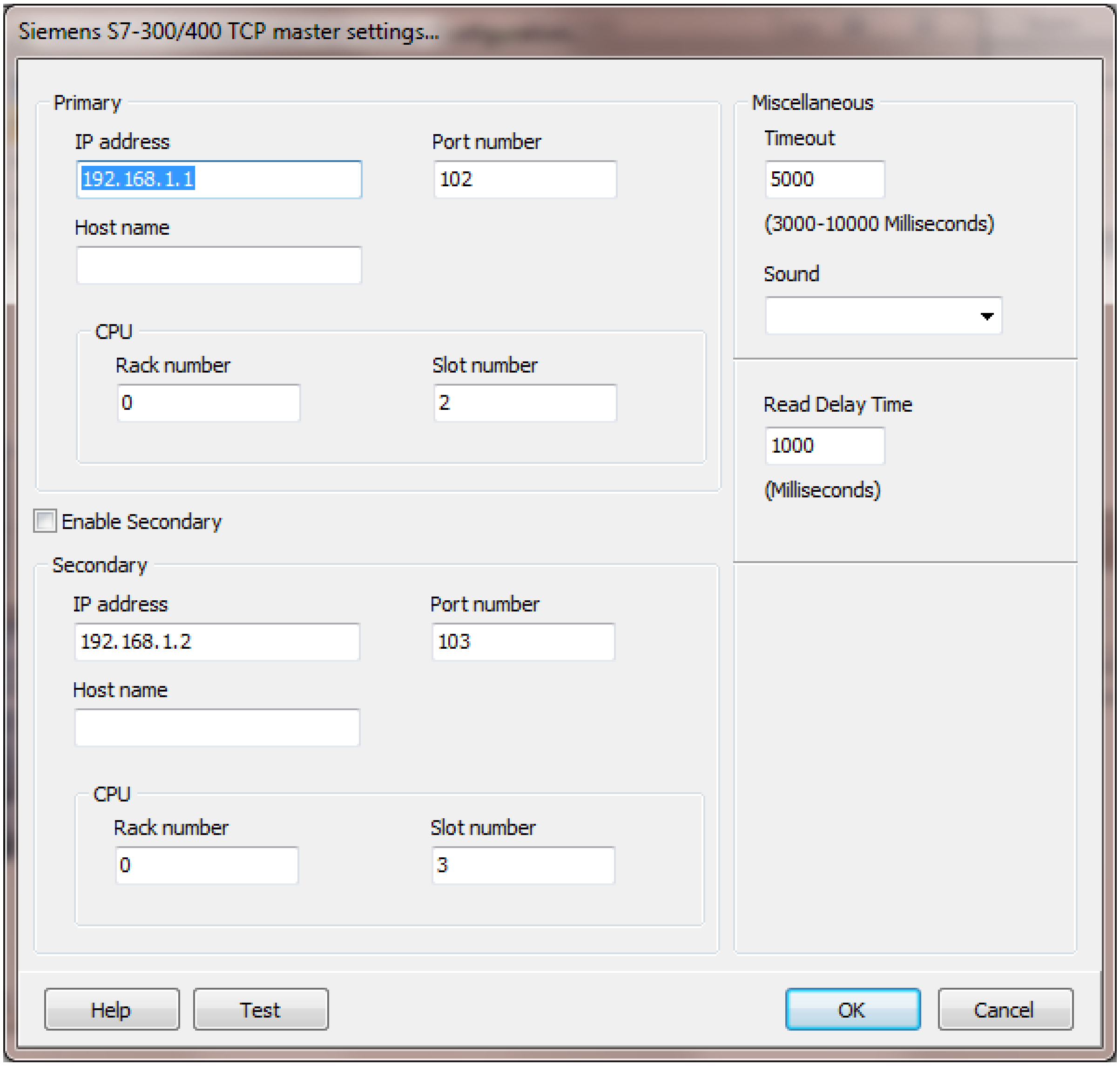
Name	Type	Settings	Reads
PLC 1	Siemens S7-300/400/1200 TCP	Edit	Edit
PLC 2	Siemens S7-300/400/1200 TCP	Edit	Edit
PLC 3	Siemens S7-300/400/1200 TCP	Edit	Edit
PLC n	Siemens S7-300/400/1200 TCP	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an S7-300/400/1200 TCP master object select the "Delete" button.

Settings


Siemens S7-300/400 TCP master settings...

Primary
IP address: 192.168.1.1
Port number: 102
Host name:
CPU
Rack number: 0
Slot number: 2

☐ Enable Secondary

Secondary
IP address: 192.168.1.2
Port number: 103
Host name:
CPU
Rack number: 0
Slot number: 3

Miscellaneous
Timeout: 5000
(3000-10000 Milliseconds)
Sound:

Read Delay Time: 1000
(Milliseconds)

The TCP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second path to be used as a hot backup. When in run mode the primary configuration is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary configuration. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary configuration, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary configuration an entry will be made in the event log and operations will return to the primary port.

If the computer has two network interface cards (NIC) the program will use the first one detected for the primary and the second one detected for the secondary. If only one NIC is detected the program will use it for the primary and the secondary.

Rack number

The rack number of the CPU.

Slot number

The slot number of the CPU. (Slot 1 for S7-1200)

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:
The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

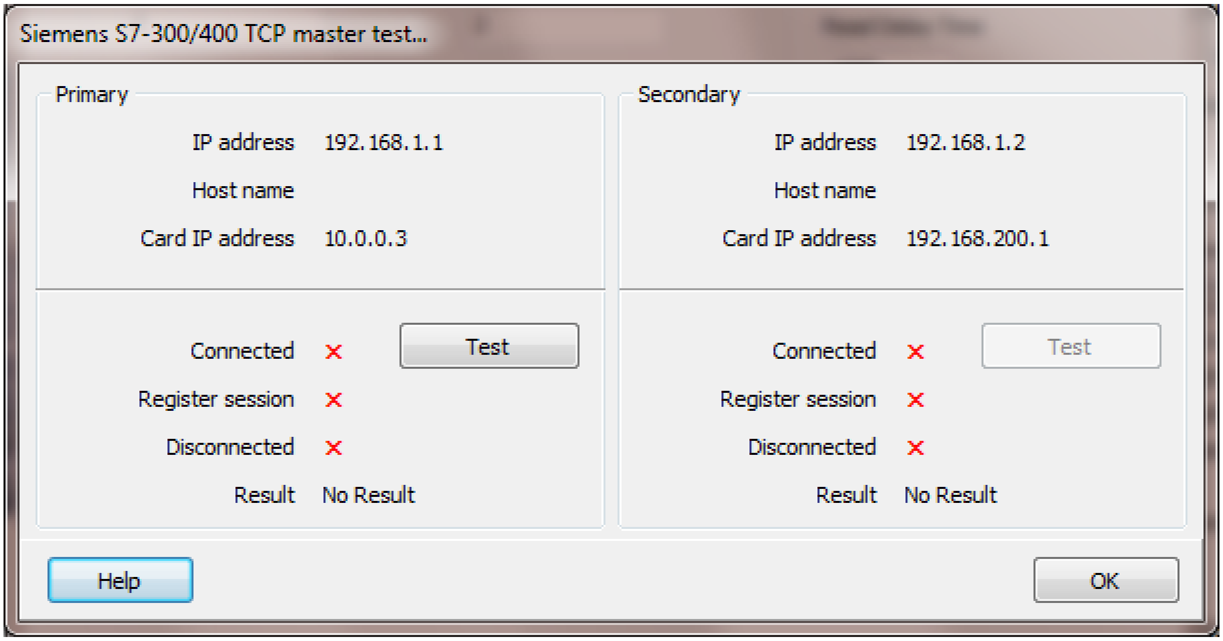
When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button


Siemens S7-300/400 TCP master test...

Primary

IP address 192.168.1.1

Host name

Card IP address 10.0.0.3

Connected ✗

Register session ✗

Disconnected ✗

Result No Result

Secondary

IP address 192.168.1.2

Host name

Card IP address 192.168.200.1

Connected ✗

Register session ✗

Disconnected ✗

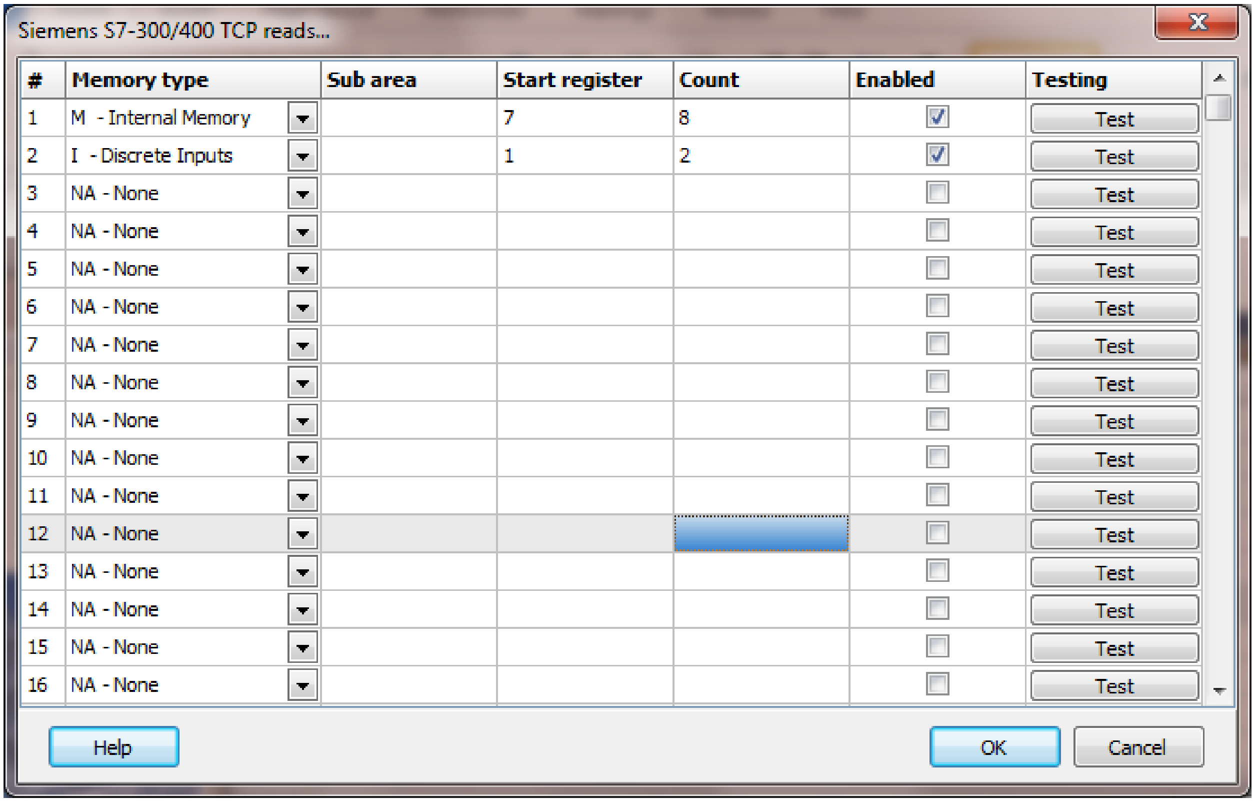
Result No Result

When the test button is selected the program will send a connect message to the device.

The program will attempt to use the communication parameters configured.

If a "host name" is entered the IP address is ignored.

Reads



Siemens S7-300/400 TCP reads...

#	Memory type	Sub area	Start register	Count	Enabled	Testing
1	M - Internal Memory		7	8	☑	Test
2	I - Discrete Inputs		1	2	☑	Test
3	NA - None				☐	Test
4	NA - None				☐	Test
5	NA - None				☐	Test
6	NA - None				☐	Test
7	NA - None				☐	Test
8	NA - None				☐	Test
9	NA - None				☐	Test
10	NA - None				☐	Test
11	NA - None				☐	Test
12	NA - None				☐	Test
13	NA - None				☐	Test
14	NA - None				☐	Test
15	NA - None				☐	Test
16	NA - None				☐	Test

The address ranges shown may or may not be present in the slave device.

Register Type

The following addresses are used for access to the data in the slave.

Register Type	Prefix	Information	
Inputs	I, IW, ID	I0.7	Bit 7 of byte 0
		I1.0	Bit 0 of byte 1
		I5	Byte 5
		IW4	Word 4
		ID8	Double word 8
Outputs	Q, QW, QD	Q0.1	Bit 1 of byte 0
		Q1.3	Bit 3 of byte 1
		Q9	Byte 9
		QW6	Word 6
		QD12	Double word 13
Internal Memory	M, MW, MD	M0.1	Bit 1 of byte 0
		M1.3	Bit 3 of byte 1
		M14	Byte 14
		MW6	Word 6
		MD12	Double word 13

Timer	T	T0 T12	Timer 0 Timer 12
Counter	C	C1 C4	Counter 1 Counter 4

Caution: Siemens addressing has overlap.
IB0 is byte 0.
IB1 is byte 1.
IW0 is byte 0 and 1.
IW1 is byte 1 and 2.
IW2 is byte 2 and 3.

Start Register

The starting register to read. The different memory areas have different register counts. Refer to the slave device for legal register values. Enter the starting register value.

Sub area

For data blocks this is the data block number (1-65535). Otherwise, this field is ignored.

Count

The number of registers to read for the request. The memory type and slave device determine the maximum number of registers that can be read. The protocol has a maximum of 222 bytes of data.

Register Type	**Data Size**	**Maximum Count**
Inputs, Outputs, Internal Memory	Byte	128
Timer	Word	111
Counter	Word	111

Notes:
1. Data blocks are also limited by the size of the data block.
2. When testing reads an error code '5' is returned when reading too many bytes/words.

Test

When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

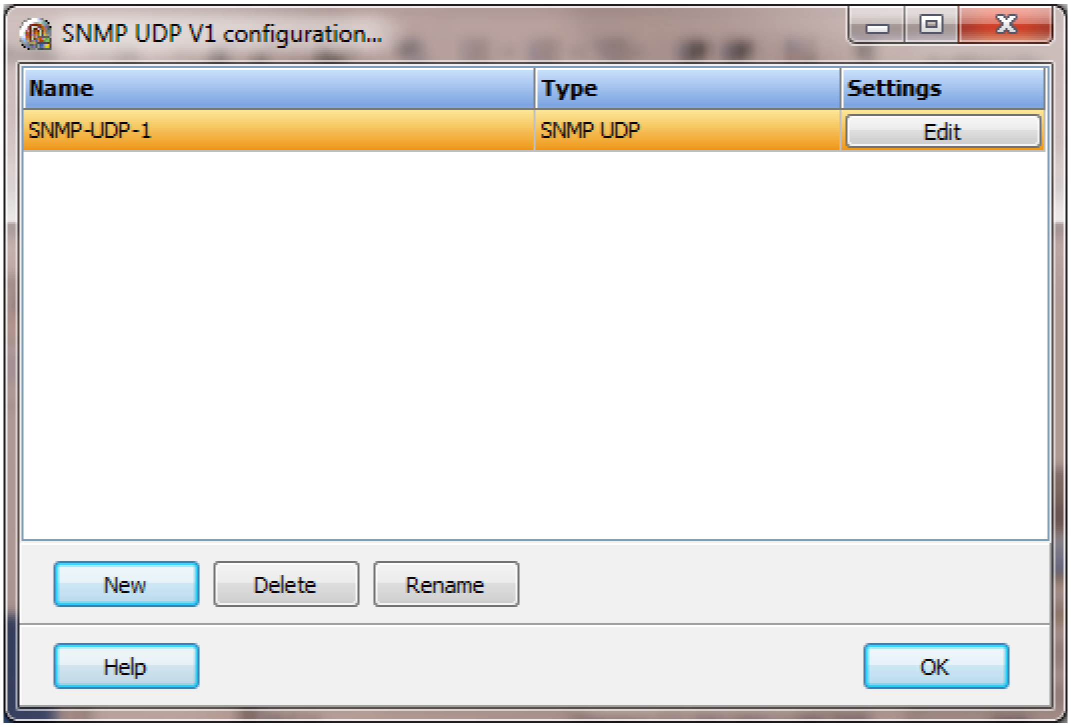
Located at the bottom left of the window is a label. If communication is all normal the label will indicate an increasing number. The label may display an error string.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

SNMP UDP

Each SNMP UDP master object is listed in the window.

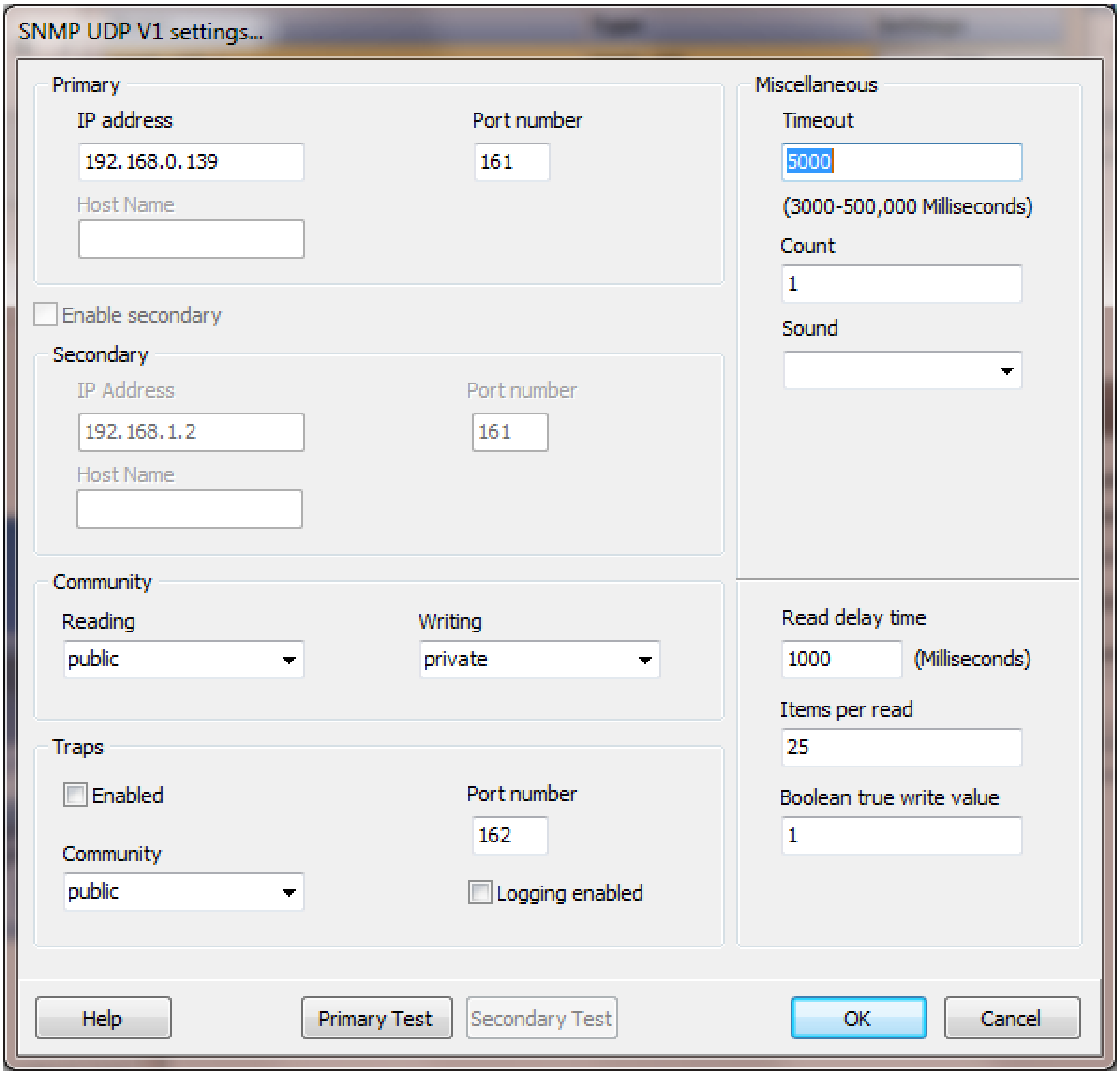

SNMP UDP V1 configuration...
Name
Type
Settings
SNMP-UDP-1
SNMP UDP
Edit
New
Delete
Rename
Help
OK

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names.

To rename an object select the "Rename" button and supply a new name.

To delete an SNMP UDP master object select the "Delete" button.

Settings


SNMP UDP V1 settings...

Primary
IP address: 192.168.0.139
Port number: 161
Host Name:

☐ Enable secondary

Secondary
IP Address: 192.168.1.2
Port number: 161
Host Name:

Community
Reading: public
Writing: private

Traps
☐ Enabled
Port number: 162
Community: public
☐ Logging enabled

Miscellaneous
Timeout: 5000
(3000-500,000 Milliseconds)
Count: 1
Sound:

Read delay time: 1000 (Milliseconds)
Items per read: 25
Boolean true write value: 1

The UDP port has a primary configuration and if enabled a secondary configuration. Select the configuration attributes as is needed.

If a host name is supplied the IP address is ignored.

Enable Secondary

The "Enable Secondary" checkbox provides for a second path to be used as a hot backup. When in run mode the primary configuration is used for reading and writing to the connected device. If the "Enable Secondary" checkbox is enabled, periodically, the run time program will attempt to communicate with the device through the secondary configuration. If it fails to communicate an entry will be made in the event log and the watchdog sound, if configured, will play.

If the watchdog timer expires the program will switch to the secondary configuration, if configured. An entry will be made in the event log and the watchdog sound, if configured, will play. If communication is established then the watchdog timer will not replay. When communications is reestablished with the device on the primary configuration an entry will be made in the event log and operations will return to the primary port.

If the computer has two network interface cards (NIC) the program will use the first one detected for the primary and the second one detected for the secondary. If only one NIC is detected the program will use it for the primary and the secondary.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Watchdog Count

UDP is a connectionless protocol. A client can respond to a message and the response can get lost. The HMI can only detect a communication failure when the client does not respond to a request. When a watchdog timeout occurs a counter is incremented. When the counter equals this attribute the actions described above will occur.

On each watchdog timer timeout the logic will issue the next request for data in the queue.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:
The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Items per read

Some devices allow the reading of multiple items per read. You may need to adjust this value down to communicate with the device. Some devices only respond with a single item per read.

Boolean true write value

SNMP does not have a Boolean data type. The HMI simulates a Boolean data type, for digital points, by defining true as not equal (<>) to zero (0) and false as zero (0). Writing a digital point to a device requires the HMI to write an integer to the device. The value can be 1 (default) 255 or -1 for true and will be zero (0) for false.

Community reading/writing

The two common communities 'public' and 'private' are listed. You can enter a different community name as required. The field must contain a valid name. The most common initial cause for write failures is the community name is incorrect.

Traps

The HMI can accept traps if enabled.

Community

Only traps from the community selected will be processed. Leave the field blank to process ALL traps.

Logging enabled

Traps are logged to a file. Each master port has a separate log file.
Each line has seven columns and each column is separated with a 'TAB' character.
Line format:<Local time> TAB <Community> TAB <Enterprise> TAB <IP address> TAB <Trap code> TAB <Specific trap code> TAB <Time stamp> CRLF(carriage return + line feed)

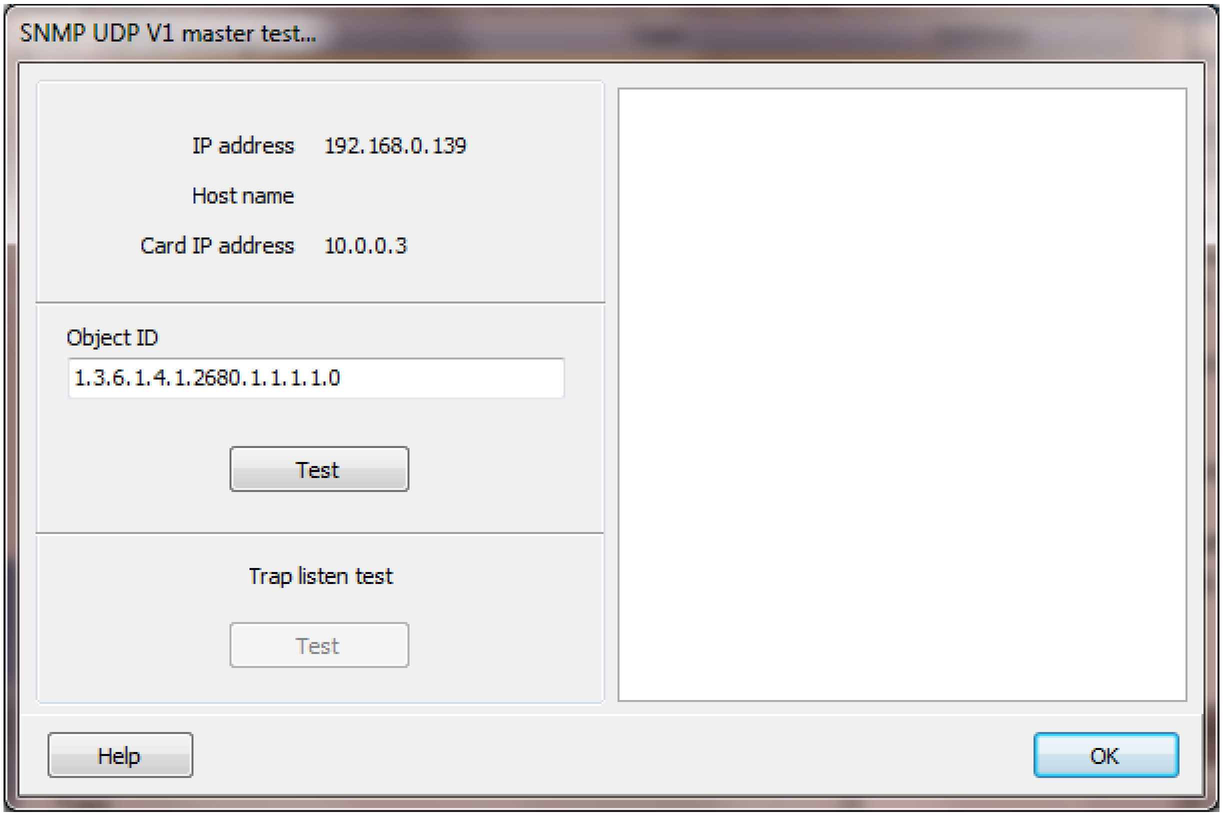
Error messages/codes

If the error message is a general message it will be a number.
If the error is associated with a request item (OID) the format is:
<read index> : <err code> : <error index>.
Example 1 : 2 : 3 : = read index 1, error code 2, item 3. Use port diagnostics to determine the point associated with the read index and item number.

Codes

0	None
1	The agent could not place the results of the requested SNMP operation in a single SNMP message.
2	The requested SNMP operation identified an unknown variable.
3	The requested SNMP operation tried to change a variable but it specified either a syntax or value error.
4	The requested SNMP operation tried to change a variable that was not allowed to change, according to the community profile of the variable.
5	An error other than one of those listed here occurred during the requested SNMP operation.
6	The specified SNMP variable is not accessible.
7	The value specifies a type that is inconsistent with the type required for the variable.
8	The value specifies a length that is inconsistent with the length required for the variable.
9	The value contains an Abstract Syntax Notation One (ASN.1) encoding that is inconsistent with the ASN.1 tag of the field.
10	The value cannot be assigned to the variable.
11	The variable does not exist, and the agent cannot create it.
12	The value is inconsistent with values of other managed objects.
13	Assigning the value to the variable requires allocation of resources that are currently unavailable.
14	No validation errors occurred, but no variables were updated.
15	No validation errors occurred. Some variables were updated because it was not possible to undo their assignment.
16	An authorization error occurred.
17	The variable exists but the agent cannot modify it.
18	The variable does not exist; the agent cannot create it because the named object instance is inconsistent with the values of other managed objects.

Primary/Secondary test button



IP address 192.168.0.139

Host name

Card IP address 10.0.0.3

Object ID

1.3.6.1.4.1.2680.1.1.1.1.0

When the test button is selected the program will display the 'SNMP Master Test...' dialog. Enter a valid object ID and select the 'Test' button. The program will attempt to issue a SNMP 'Get Request' command to the agent configured

If the connection is the primary it will bind the socket to the first NIC detected.

If the connection is the secondary it will bind the socket to the second NIC, if detected. If a second NIC is not installed it will bind the socket to the first NIC detected.

If a "host name" is entered the IP address is ignored.

The request packet and the response packet are displayed in the memo field. The agent must respond within three seconds or the attempt is aborted.

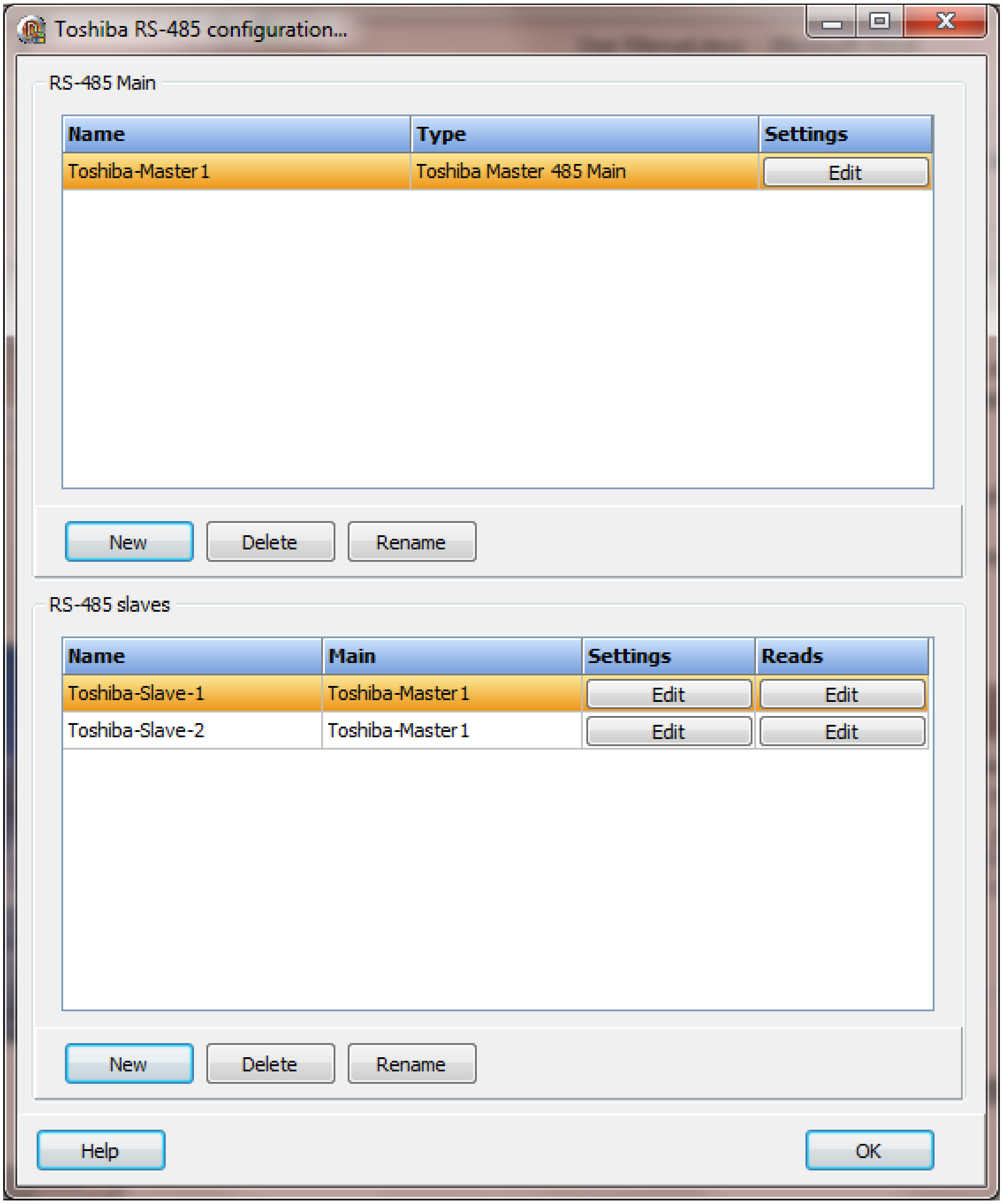
Addressing

Source address is the "direct code" addressing.

Example: 1.3.6.1.2.1.1.6

TOSHIBA SERIAL 232/485

Each Toshiba master object controls one serial port and can have one or many slave objects. The slaves are configured to address one device.


Toshiba RS-485 configuration...

RS-485 Main

Name	Type	Settings
Toshiba-Master1	Toshiba Master 485 Main	Edit

New
Delete
Rename

RS-485 slaves

Name	Main	Settings	Reads
Toshiba-Slave-1	Toshiba-Master1	Edit	Edit
Toshiba-Slave-2	Toshiba-Master1	Edit	Edit

New
Delete
Rename
Help
OK

Note: RS-485 is sensitive to improper wiring and/or terminations. Unpowered units can cause data echoes and other reliability issues. Please follow all RS-485 wiring guidelines.

Toshiba serial main

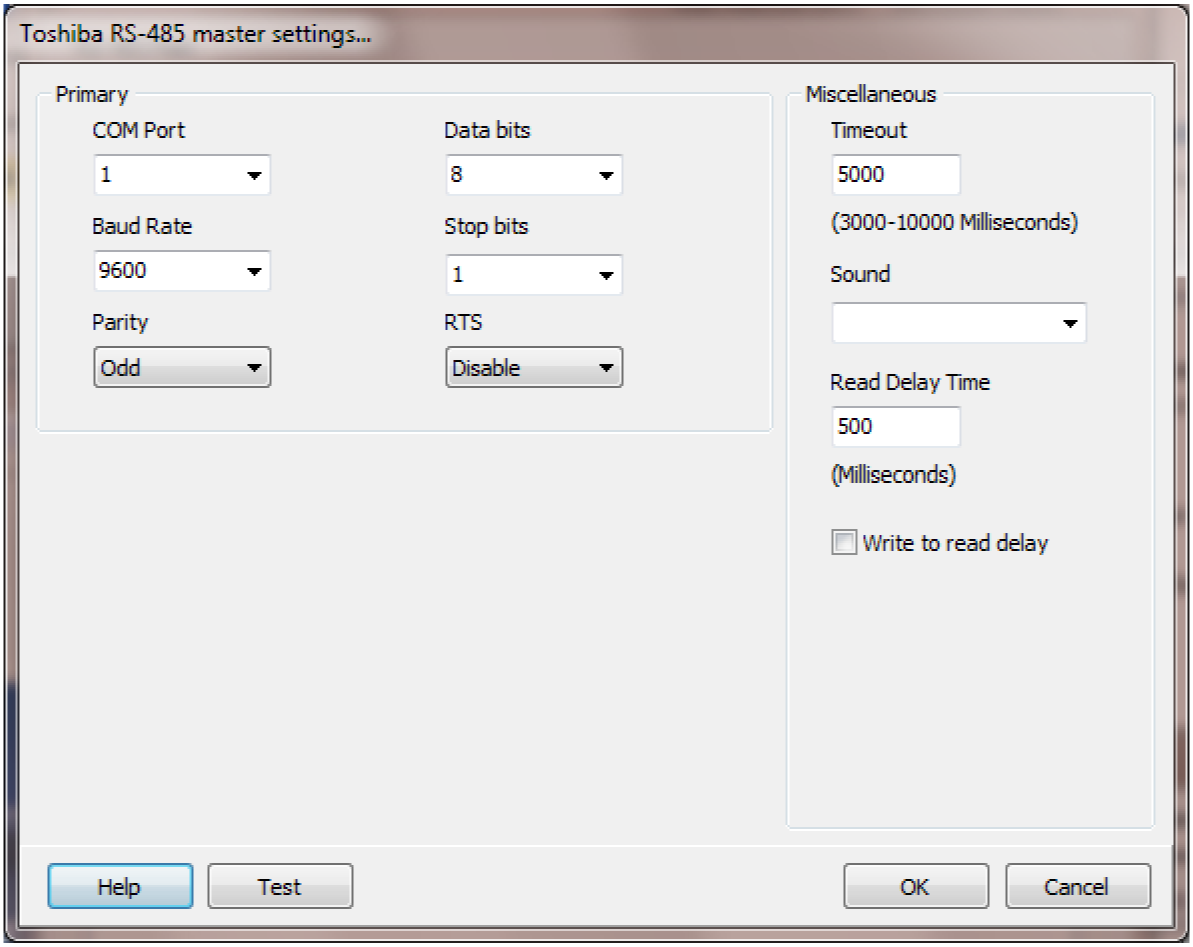
Each Toshiba master object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Fatek master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Toshiba master object select the "Delete" button.

Settings



Toshiba RS-485 master settings...

Primary

COM Port: 1

Baud Rate: 9600

Parity: Odd

Data bits: 8

Stop bits: 1

RTS: Disable

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read Delay Time: 500

(Milliseconds)

☐ Write to read delay

Select the port attributes as required.

If you have a non-standard baud rate and the com port on the PC supports the baud rate type in the desired rate. (Do not include any commas. The number must be a whole number.)

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data was received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read request.

Operation:

The read request are issued, if the read request is enabled, from top to bottom as configured.

A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.

To prevent flooding due to write request the next read request is always issued after a write request.

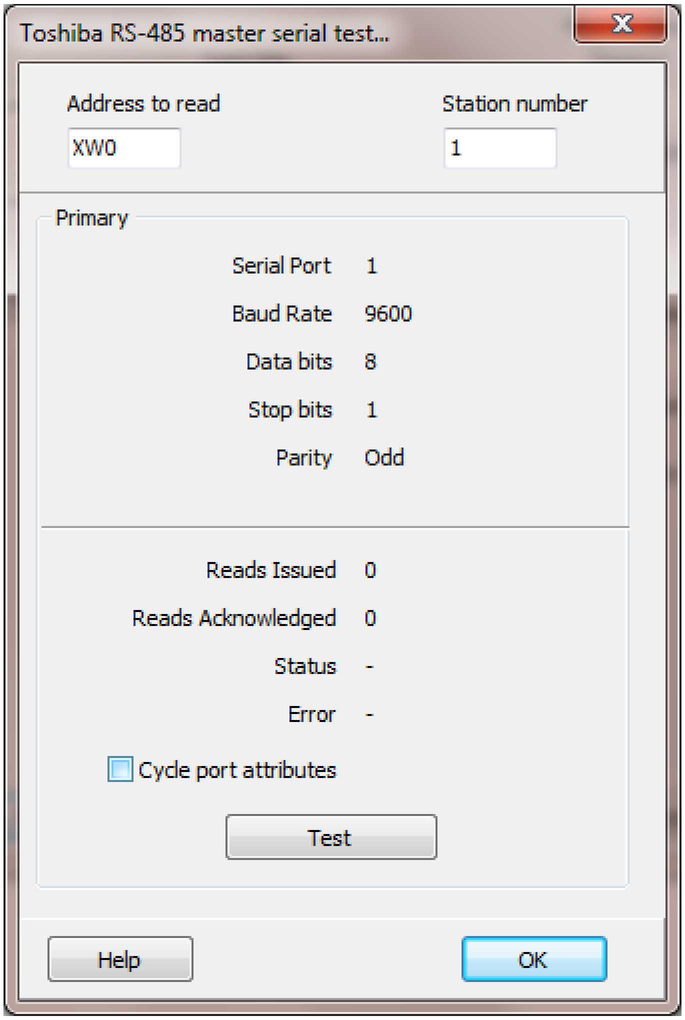
If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Write to read delay

After the write response is received from the PLC the next read is issued. Normally, the next read request can be sent without delay. Some computers, mostly notebooks/laptops and some external devices cannot switch from transmit to receive fast enough causing the read request after the write response to fail, generating a 'watchdog' time out. If this is occurring then enable this attribute and the 'read delay time' will be used to delay the read request.

Test button



Address to read: XW0

Station number: 1

Serial Port 1

Baud Rate 9600

Data bits 8

Stop bits 1

Parity Odd

Reads Issued 0

Reads Acknowledged 0

Status -

Error -

☐ Cycle port attributes

When the test button is selected the program will attempt to read one point of data from the device at the address entered.

The program will attempt to use the communication parameters configured.

If the "Cycle port attributes" checkbox is checked the program will cycle through the user configured communication settings and some standard parameters. The test will loop checking for a connection. If a connection is detected a dialog box will appear and the looping will end.

Toshiba serial slaves

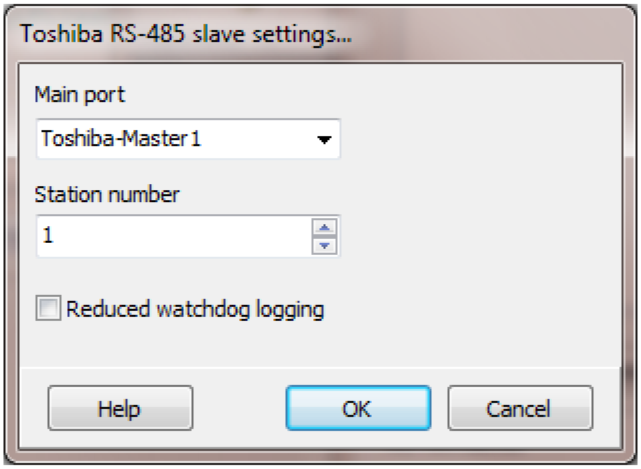
Each Toshiba slave object is listed in the window.

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Toshiba slave objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Toshiba slave object select the "Delete" button.

Settings



Main port

Toshiba-Master1

Station number

1

☐ Reduced watchdog logging

Main port

This is the master RS-485 port the slave is linked to. A port must be linked to a master for runtime operations.

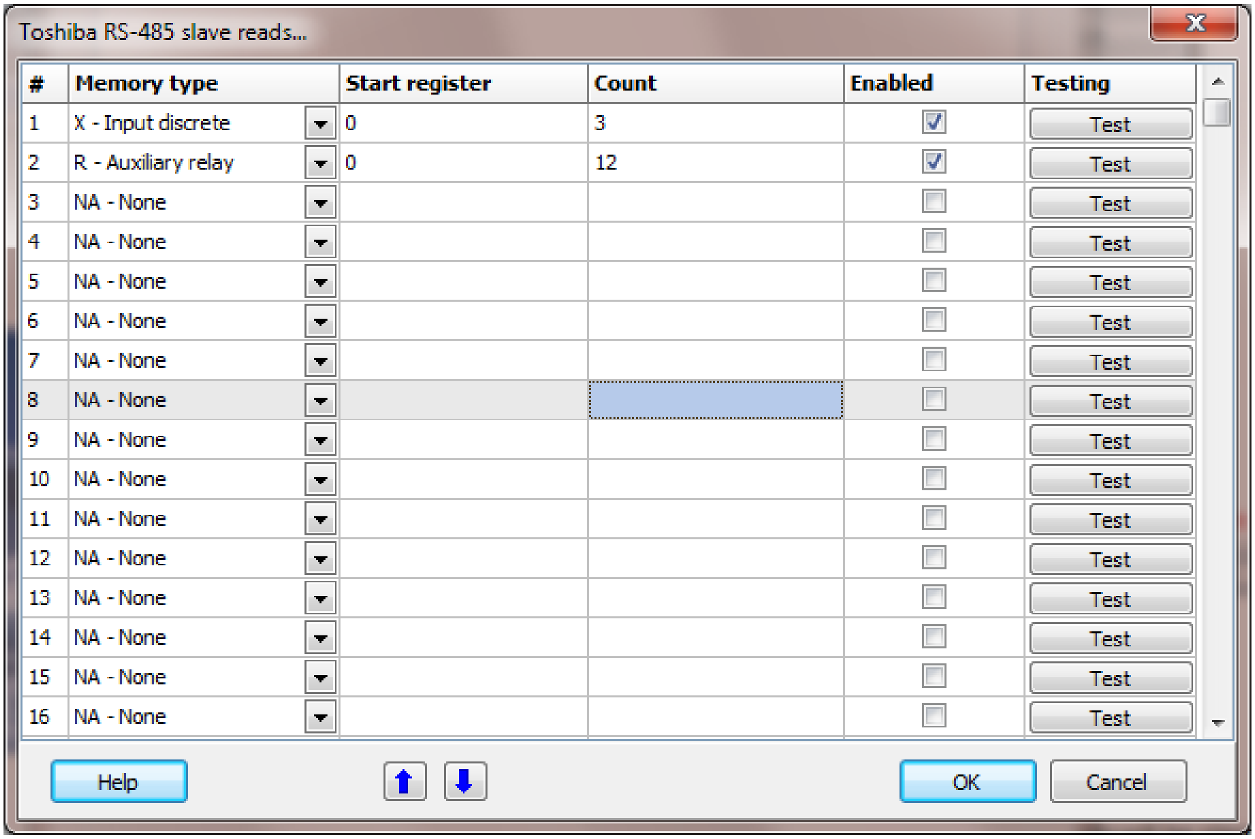
Station number (Future)

This is the station number of the slave device. (1 - 255)

Reduced watchdog logging

When enabled and a watchdog timeout occurs, a single entry will be placed in the event log and the sound will be queued (if configured). When the slave device responds, after a watchdog timeout, a single entry will be placed in the event log. The watchdog counter will continue to count each time the watchdog timer expires.

Reads



#	Memory type	Start register	Count	Enabled	Testing
1	X - Input discrete	0	3	☑	Test
2	R - Auxiliary relay	0	12	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

Registers

Address Examples

X01	Word 0 bit 1
X283	Word 28 bit 3
X12E	Word 12 bit E
Y37	Word 3 bit 7
Y21F	Word 21 bit F
T3	Timer 3
C17	Counter 17
T.64	Timer 64 complete flag
D44	Data register 44

Note: For X, Y, R and S registers the Toshiba specification states the last digit must be in hexadecimal and the leading digits up to 3 places must be decimal. 1F is legal, F1 is not. In hexadecimal when 1 is added to 9F the result is A0. A0 would not be legal per the specification. After 9F in the specification is 100. Word 10 bit 0. Verify the external device has the address desired.

Point configuration source field for analog points.

Source Type	Range	Register count (words)
None	0-65535	1
Float IEEE-754	standard format	2
Integer	-2,147,483,648 .. 2,147,483,647	2
BCD2	Not applicable	
Small integer	-32,768 .. 32,767	1
Unsigned integer	0 ... 4,294,967,295	2

Notes:
1) Points using two registers must start on an even register; Valid D0, D2, D4, etc. Invalid D1, D3, D5, etc.
2) Using the 'StringSet' script command is limited to 32 registers. Using format 0, 1, or 2 allows for a maximum of 64 characters. Using format 3 or 4 allows for a maximum of 32 characters.
3) Per the Toshiba specification, T. and C. address are read only.
4) When writing the accumulator of a timer and the timer is not controlled via ladder logic, the timer complete flag will be cleared.

Memory type

Register Type	Prefix	Data Type	Format
Input discrete	X, XW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)
Output relay	Y, YW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)
Auxiliary relay	R, RW	Boolean/Word	DDDH (Dec, Dec, Dec, Hex), DDD(Dec, Dec, Dec)
Special devices	S, SW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)
Timer	T	Word Dec	
Counter	C	Word Dec	
Data Register	D	Word Dec	
Link register	L, LW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)

Start register

The starting register to read. This is the word address of the memory area.

Count

This is the number of words/items to return. The per read limit is 32.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

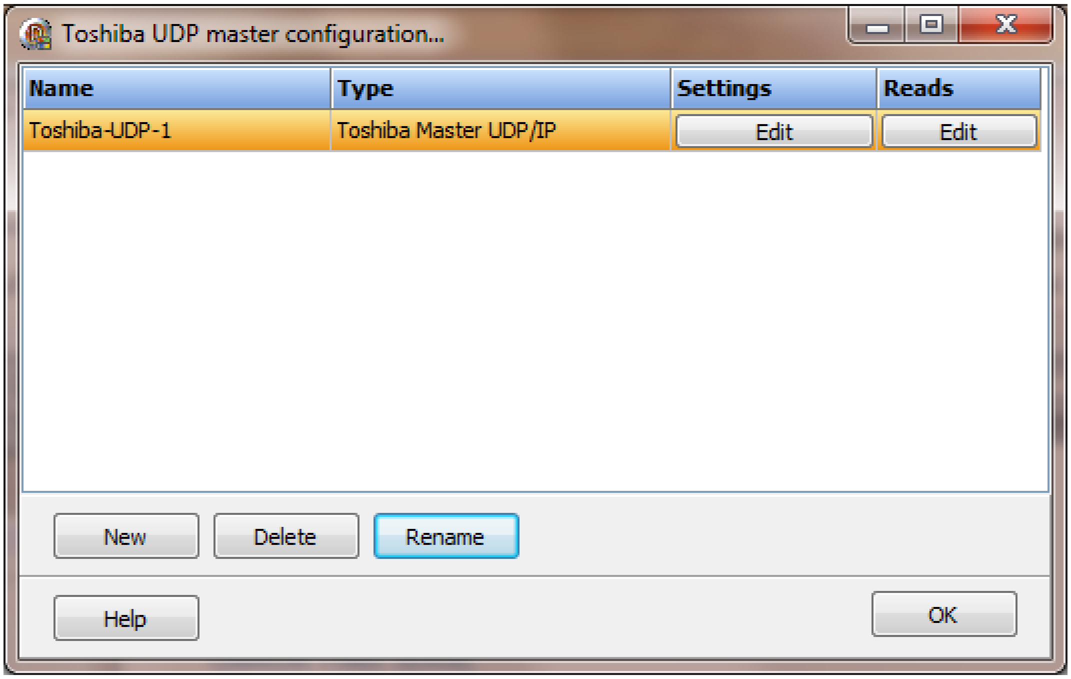
When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

TOSHIBA UDP

Each Toshiba UDP master object is listed in the window.



Toshiba UDP master configuration...

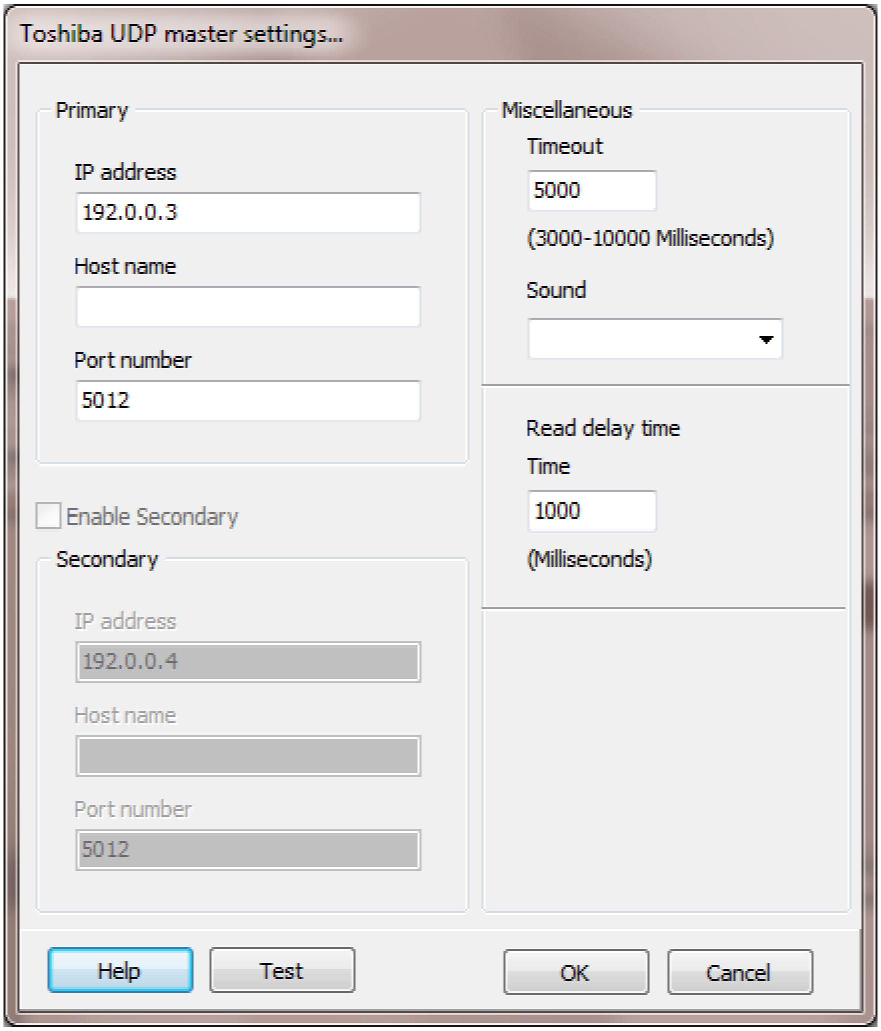
Name	Type	Settings	Reads
Toshiba-UDP-1	Toshiba Master UDP/IP	Edit	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible Toshiba UDP master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a Toshiba UDP master object select the "Delete" button.

Settings



Toshiba UDP master settings...

Primary

IP address: 192.0.0.3

Host name:

Port number: 5012

☐ Enable Secondary

Secondary

IP address: 192.0.0.4

Host name:

Port number: 5012

Miscellaneous

Timeout: 5000

(3000-10000 Milliseconds)

Sound:

Read delay time

Time: 1000

(Milliseconds)

If a host name is supplied the IP address is ignored.

Miscellaneous

Watchdog Timer

The watchdog timer is reset when data is received via the configured media or the timer completes. The timer completes when no data has been received since the last time data received plus the timer length.

When the timer completes an entry is made in the event log and a sound is played if configured. To not play a sound delete, the value in the sound name field.

Read Delay Time

To allow the throttling of data request to the slave device the value entered is the delay time between read requests.

Operation:

The read requests are issued, if the read request is enabled, from top to bottom as configured.

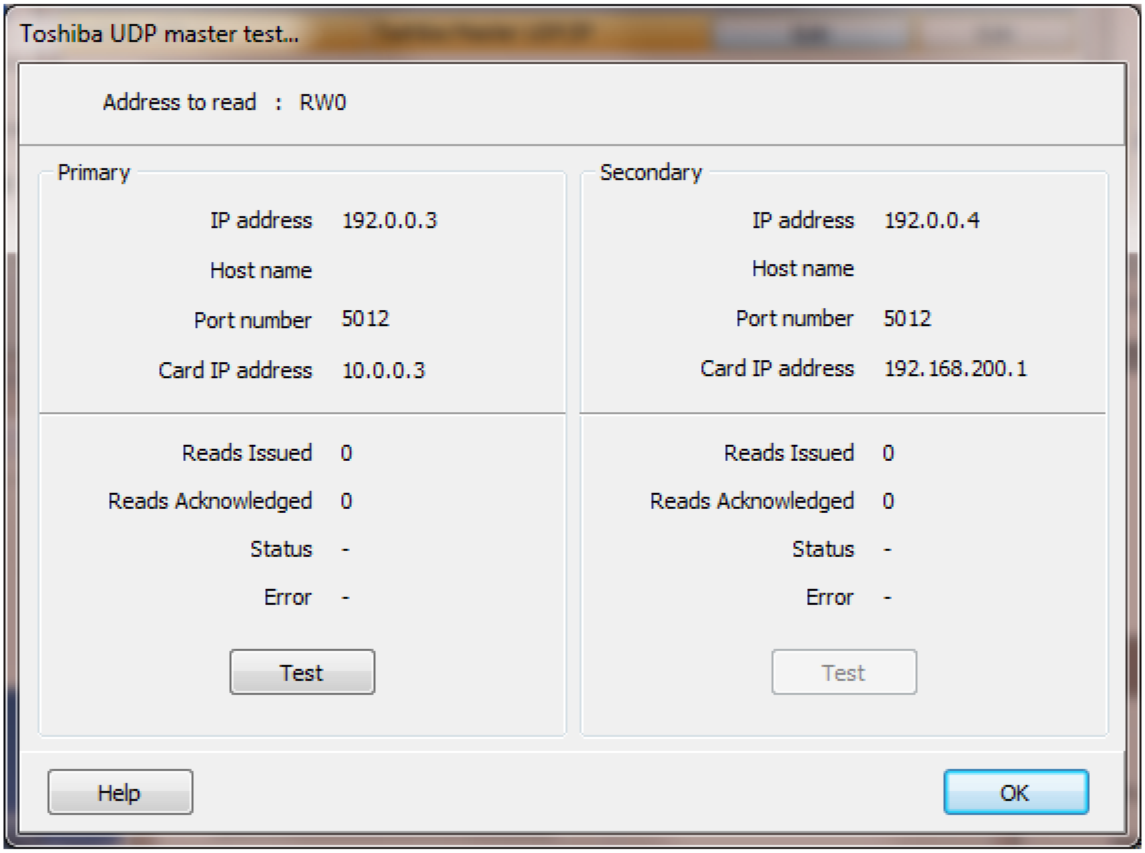
A read request is issued. When a response to the last issued command is received and a write request is pending it is issued.

When a response to the last issued command is received and the time value is greater than 0 the timer starts. When the timer expires the next read request is issued. If the time value is not greater than 0 the next read request is issued.
To prevent flooding due to write request the next read request is always issued after a write request.

If the watchdog timer times out it fires the read/write processing logic.

If a response is not received for a write command the write is attempted two more times. If it fails all three times an entry is made in the event log.

Test button


Toshiba UDP master test...

Address to read : RW0

Primary

IP address 192.0.0.3

Host name

Port number 5012

Card IP address 10.0.0.3

Reads Issued 0

Reads Acknowledged 0

Status -

Error -

Secondary

IP address 192.0.0.4

Host name

Port number 5012

Card IP address 192.168.200.1

Reads Issued 0

Reads Acknowledged 0

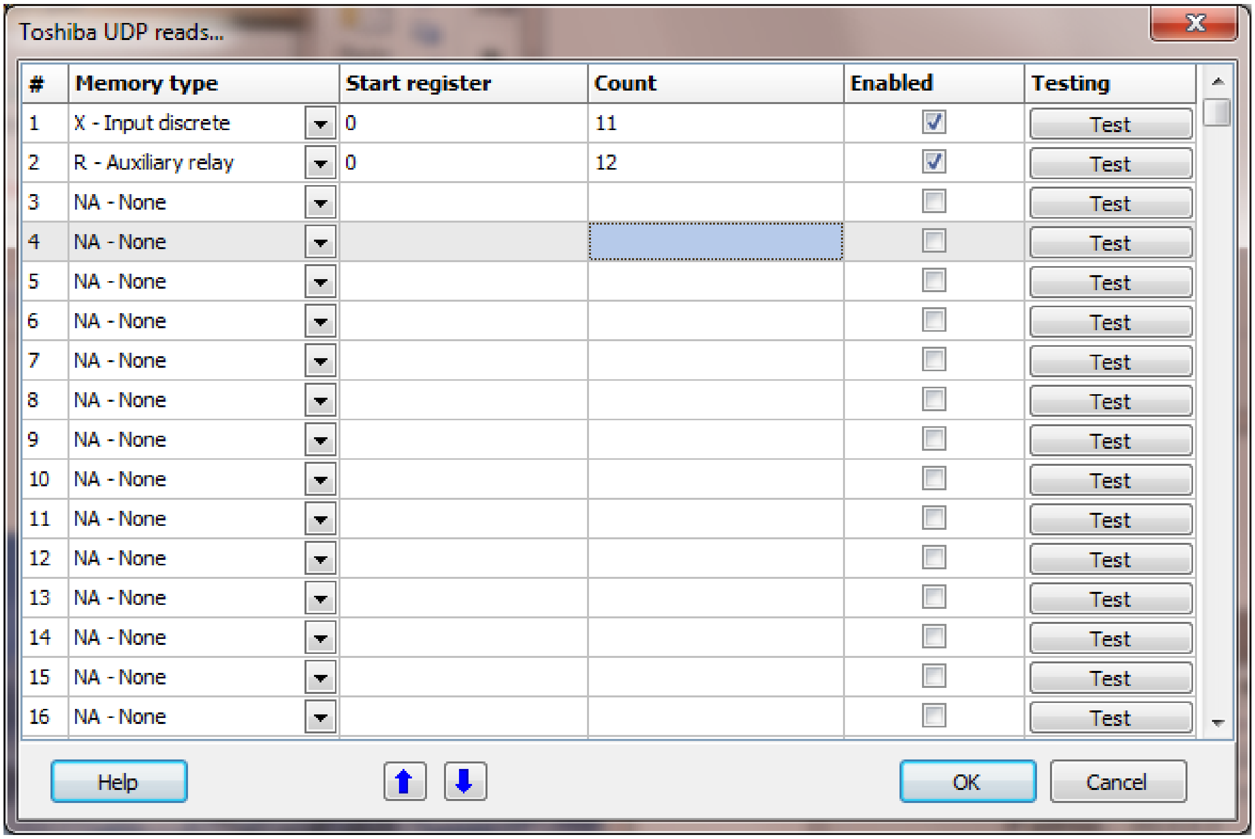
Status -

Error -

When the test button is selected the program will send a read request to read one word starting at RW0.

The program will attempt to use the communication parameters configured.

Reads



#	Memory type	Start register	Count	Enabled	Testing
1	X - Input discrete	0	11	☑	Test
2	R - Auxiliary relay	0	12	☑	Test
3	NA - None			☐	Test
4	NA - None			☐	Test
5	NA - None			☐	Test
6	NA - None			☐	Test
7	NA - None			☐	Test
8	NA - None			☐	Test
9	NA - None			☐	Test
10	NA - None			☐	Test
11	NA - None			☐	Test
12	NA - None			☐	Test
13	NA - None			☐	Test
14	NA - None			☐	Test
15	NA - None			☐	Test
16	NA - None			☐	Test

The address ranges shown may or may not be present in the slave device.

Registers

Address Examples

X01	Word 0 bit 1
X283	Word 28 bit 3
X12E	Word 12 bit E
Y37	Word 3 bit 7
Y21F	Word 21 bit F
T3	Timer 3
C17	Counter 17
T.64	Timer 64 complete flag
D44	Data register 44

Note: For X, Y, R and S registers the Toshiba specification states the last digit must be in hexadecimal and the leading digits up to 3 places must be decimal. 1F is legal, F1 is not. In hexadecimal when 1 is added to 9F the result is A0. A0 would not be legal per the specification. After 9F in the specification is 100. Word 10 bit 0. Verify the external device has the address desired.

Point configuration source field for analog points.

Source Type	Range	Register count (words)
None	0-65535	1
Float IEEE-754	standard format	2
Integer	-2,147,483,648 .. 2,147,483,647	2
BCD2	Not applicable	
Small integer	-32,768 .. 32,767	1
Unsigned integer	0 ... 4,294,967,295	2

Notes:

1) Points using two registers must start on an even register; Valid D0, D2, D4, etc. Invalid D1, D3, D5, etc.
2) Using the 'StringSet' script command is limited to 32 registers. Using format 0, 1, or 2 allows for a maximum of 64 characters. Using format 3 or 4 allows for a maximum of 32 characters.
3) Per the Toshiba specification, T. and C. address are read only.
4) When writing the accumulator of a timer and the timer is not controlled via ladder logic, the timer complete flag will be cleared.

Memory type

Register Type	Prefix	Data Type	Format
Input discrete	X, XW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)
Output relay	Y, YW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)
Auxiliary relay	R, RW	Boolean/Word	DDDH (Dec, Dec, Dec, Hex), DDD(Dec, Dec, Dec)
Special devices	S, SW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)
Timer	T	Word Dec	
Counter	C	Word Dec	
Data Register	D	Word Dec	
Link register	L, LW	Boolean/Word	DDH (Dec, Dec, Hex), DD(Dec, Dec)

Start register

The starting register to read. This is the word address of the memory area.

Count

This is the number of words/items to return. The per read limit is 32.

Enabled

The read request are processed from 1 to n. If the read is enabled it will be processed. If the read is disabled the read will be skipped. The enable attribute is accessible from scripts.

For example: You may have one or more screens that show some data. This data does no alarming or trending and is only viewed from the user while viewing a screen. You can create a read that request the data. When the user opens the screen for viewing the read can be enabled and when the user closes the screen the read can be disabled.

Test

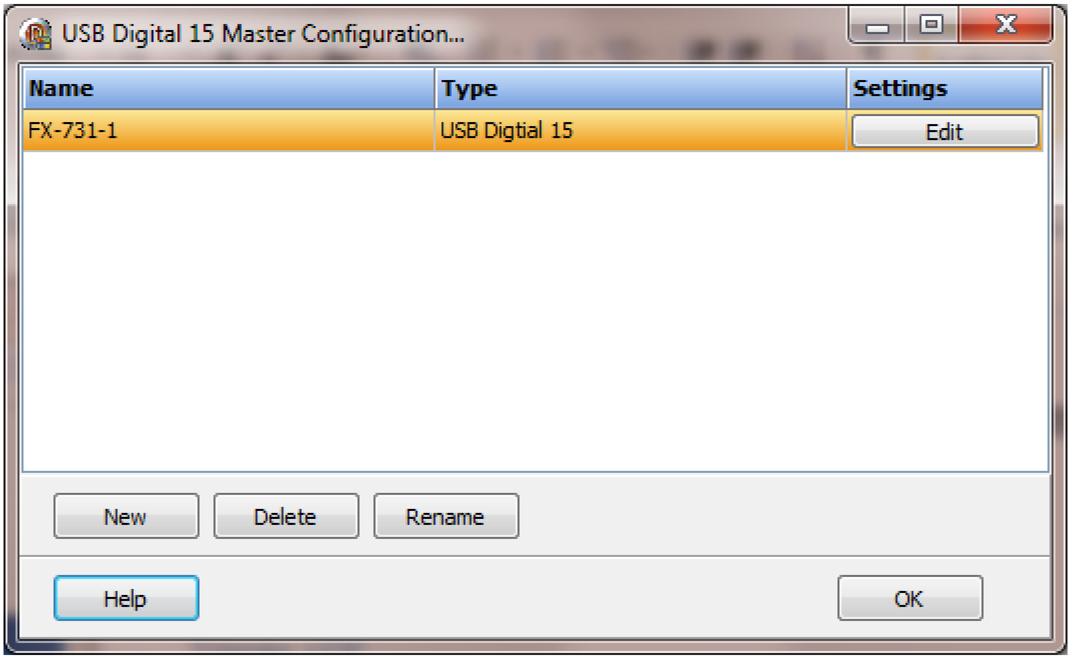
When the button is selected the program will attempt to access the data in the device using the communication parameters configured. By default the primary configuration is used for testing. To use the secondary configuration hold down the "Ctrl" key while pressing the test button.

Error messages

No memory type selected	A memory type must be selected.
Start out of range	Start register must be: 0 - 65535
Count exceeds limit	The number of registers to read is too high for the memory type.
Start register + count exceeds limit	Register start + count greater than memory end.
Count < 1	Must read at least one register.

USB Digital I/O 15 (FX-731C)

Each USB Digital I/0 15 master object is listed in the window.


USB Digital 15 Master Configuration...
New
Delete
Rename
Help
OK

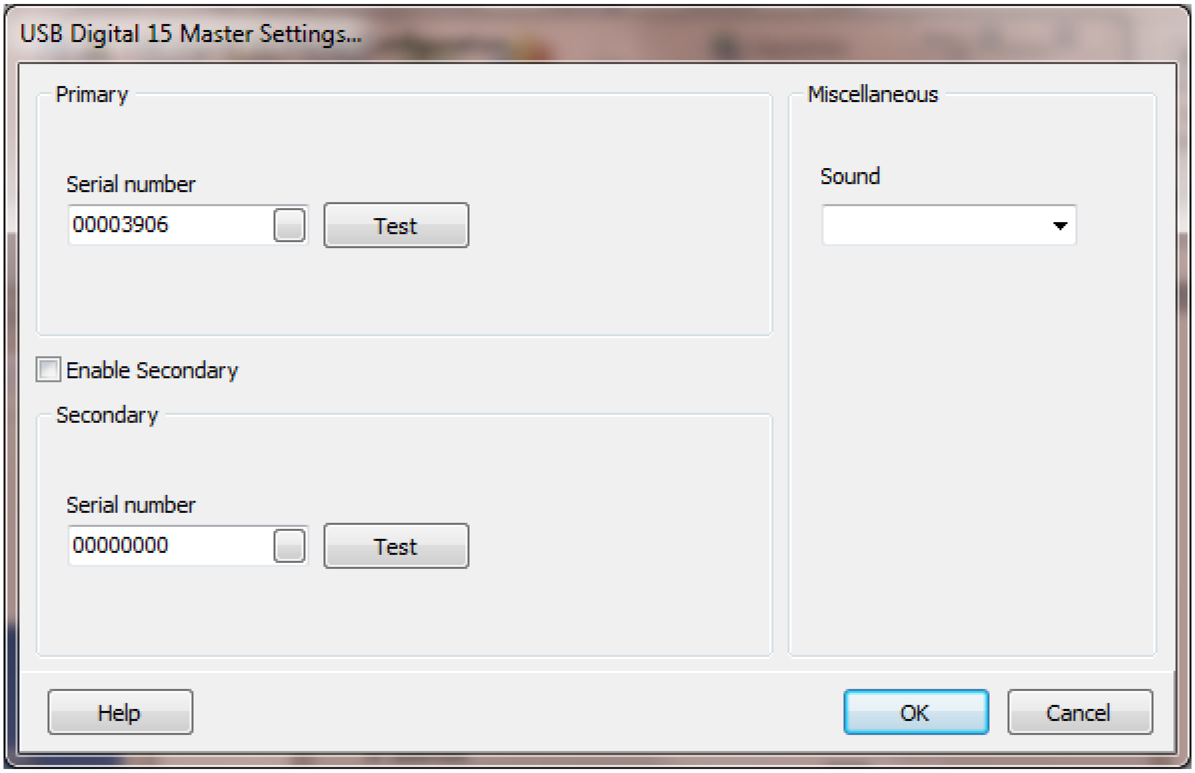
Name	Type	Settings
FX-731-1	USB Digtial 15	Edit

To create a new object select the "New" button and enter a name. Each name must be unique across all tag names. The number of permissible USB Digital I/0 15master objects is limited by the license purchased.

To rename an object select the "Rename" button and supply a new name.

To delete a USB Digital I/0 15master object select the "Delete" button.

Settings



USB Digital 15 Master Settings...

Primary

Serial number: 00003906

☐ Enable Secondary

Secondary

Serial number: 00000000

Miscellaneous

Sound

The port has a primary configuration and if enabled a secondary configuration. The I/O device reports any change of state in the digital inputs to the program.

Serial number

Each digital I/O 15 device has a unique serial number. The number is eight digits long and is in hexadecimal. Any leading zeros (0) are needed. Selecting the button in the serial number field will display all connected devices. The serial number in the field must exactly match the device serial number.

Selecting the test button will display the I/O for the serial number selected.
CAUTION! Changing the state of outputs may cause harm to personal or machinery.

Miscellaneous

Sound

The device reports changes in state of the inputs to the program when they occur. The program accesses the device approximately every 5 seconds to verify the device is connected. If the device does not answer the watchdog flag is set, an entry is made in the event log and a sound is played if configured. To not play a sound, delete the value in the sound name field.

Addressing

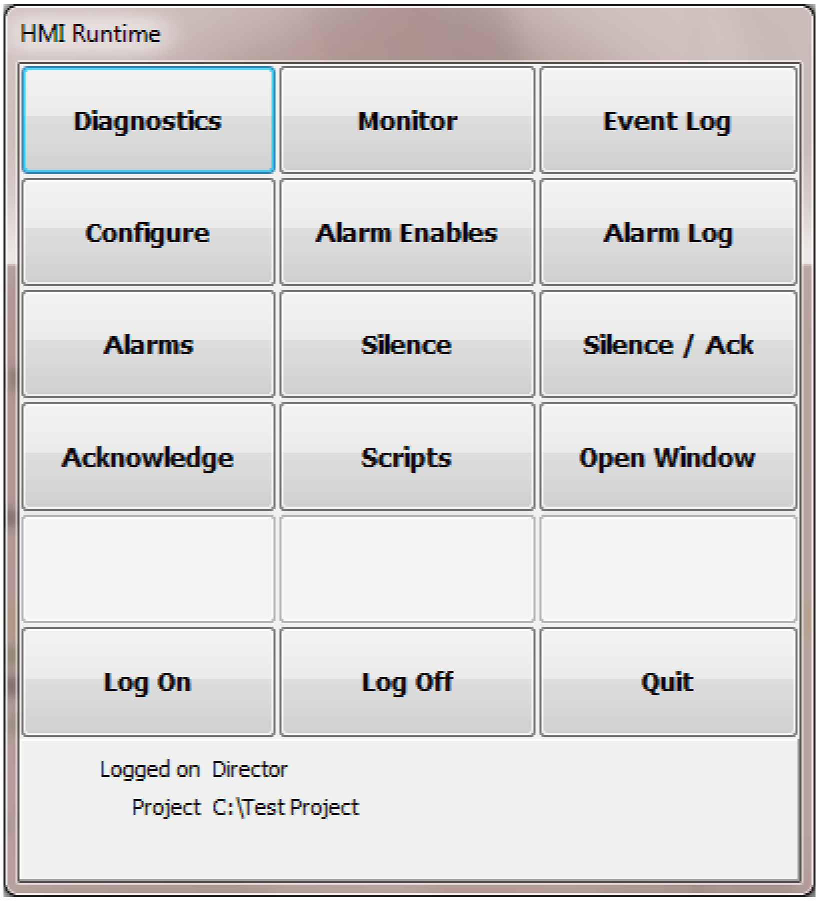
I for inputs and Q for outputs.

The device has 15 inputs and 15 outputs.

I1 - I15
Q1 - Q15

RUNTIME

RUNTIME PANEL


HMI Runtime
Diagnostics
Monitor
Event Log
Configure
Alarm Enables
Alarm Log
Alarms
Silence
Silence / Ack
Acknowledge
Scripts
Open Window
Log On
Log Off
Quit

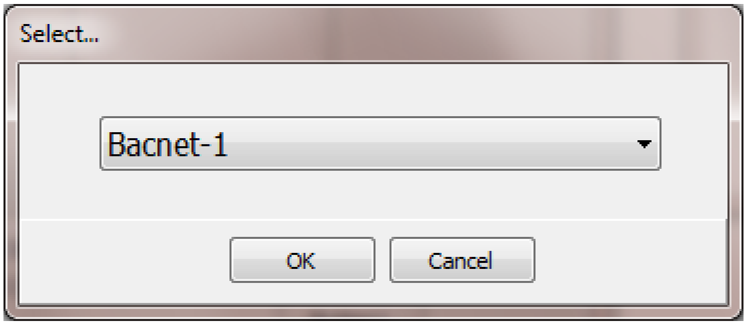
Logged on Director
Project C:\Test Project

The runtime panel is the main window for the HMI monitoring program. The buttons will be enabled/disabled based on the logged on user and user level.

Closing the window will end runtime monitoring and launch the configuration program.

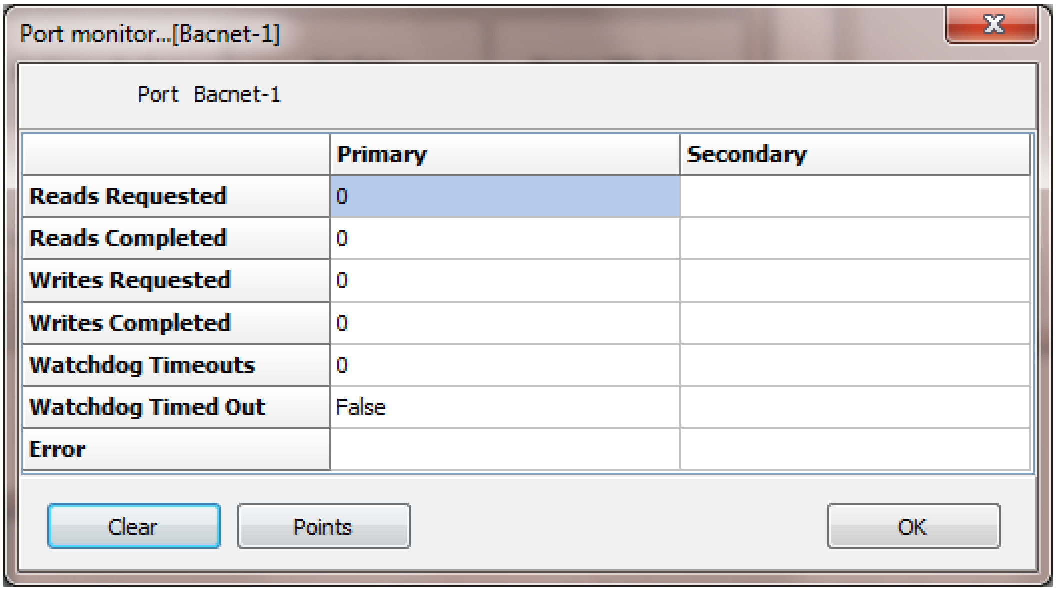
Diagnostics

This button will display a window to allow for the selection of a port.



Bacnet-1

After the port is selected the port diagnostics window will appear.



Port Bacnet-1

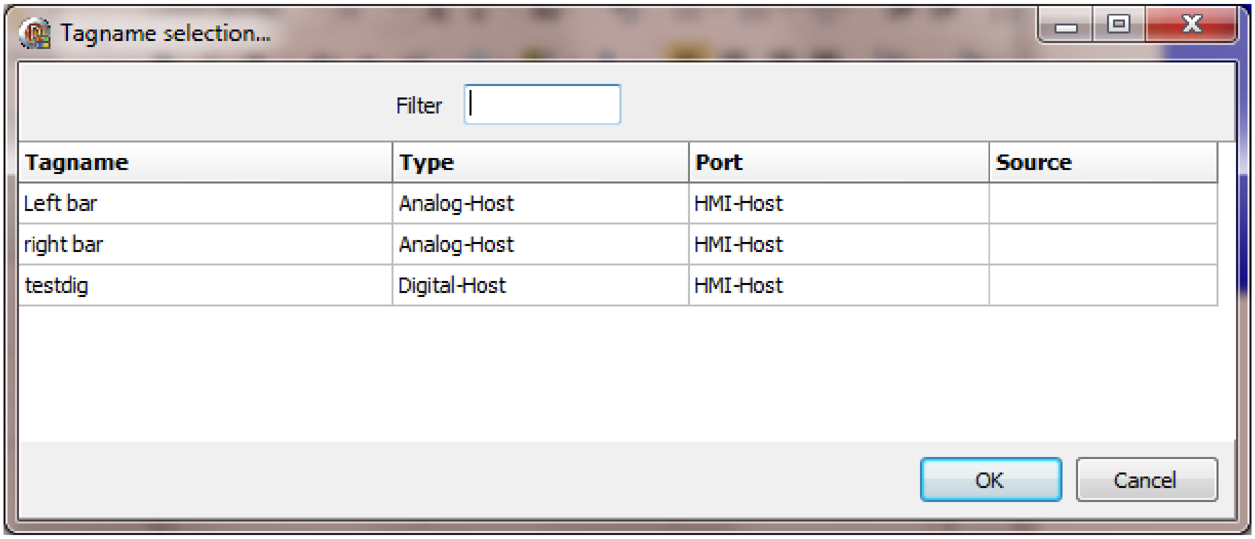
	Primary	**Secondary**
Reads Requested	0	
Reads Completed	0	
Writes Requested	0	
Writes Completed	0	
Watchdog Timeouts	0	
Watchdog Timed Out	False	
Error		

Most of the port diagnostic windows appear like the one above and display the same information for the selected port. Some port types display a different window because the diagnostic data for the port is customized for the port type. Multiple port diagnostic windows can be open concurrently.

Most of the port diagnostic windows are also able to show the raw data collected from the external device.

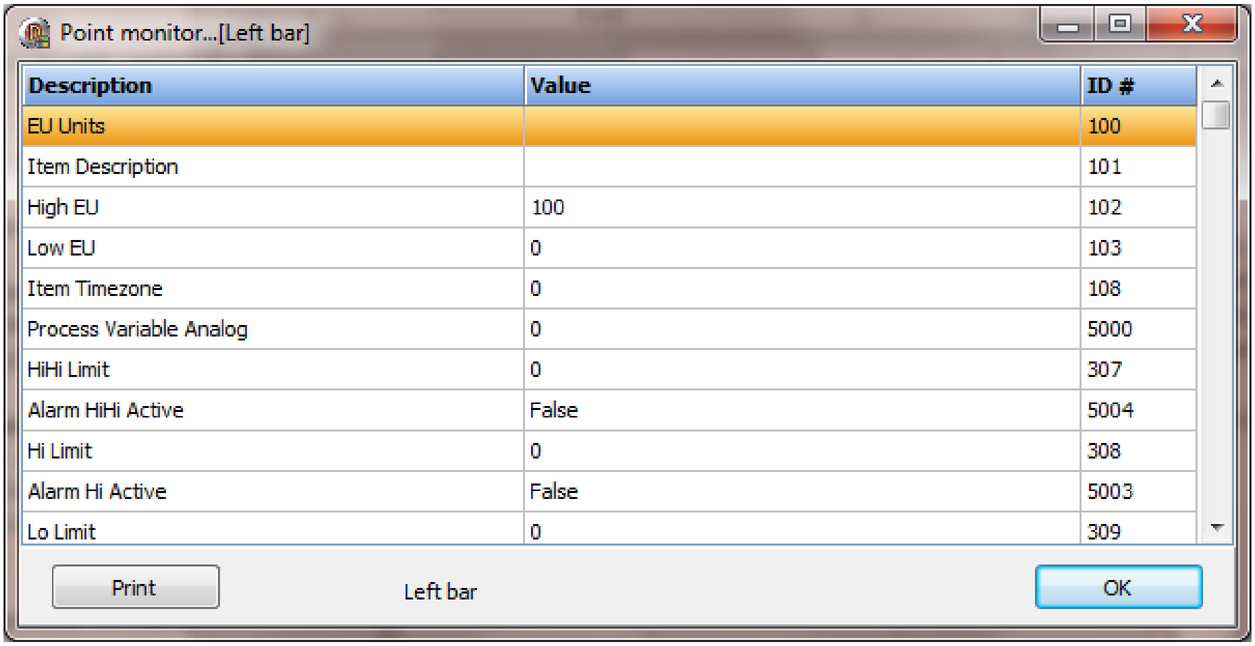
Monitor

This button will display a window to all for the selection of a point.


Tagname selection...
Filter
OK
Cancel

Tagname	Type	Port	Source
Left bar	Analog-Host	HMI-Host	
right bar	Analog-Host	HMI-Host	
testdig	Digital-Host	HMI-Host	

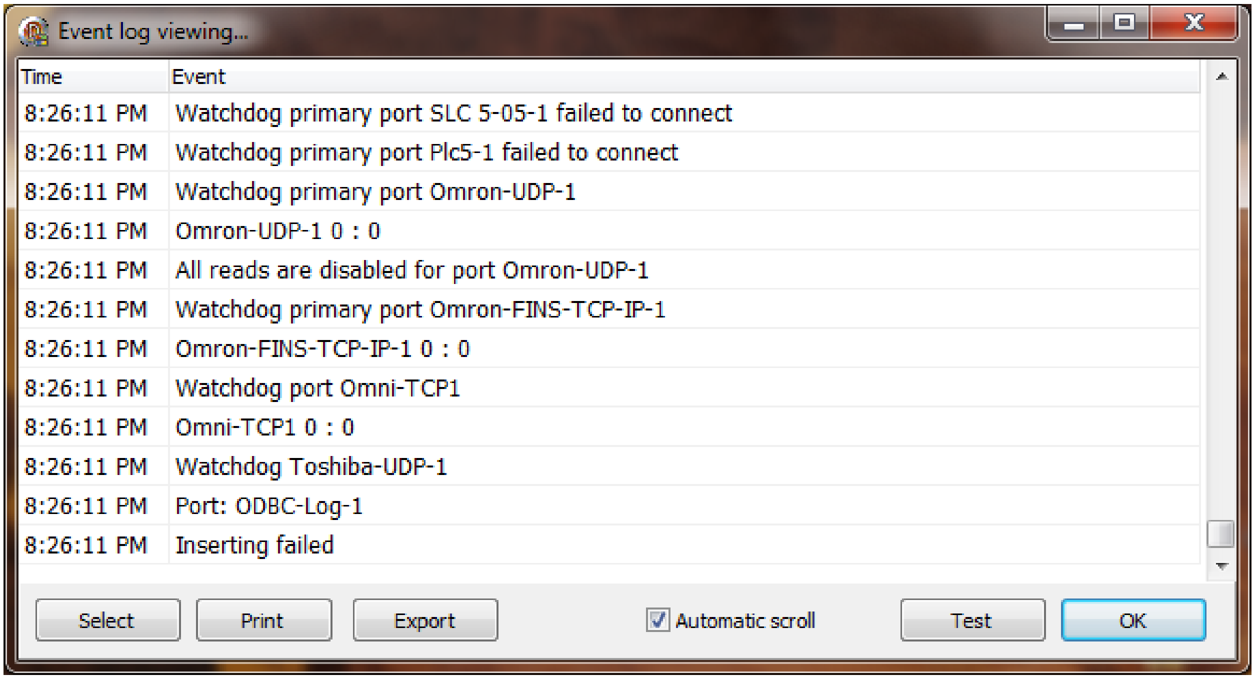
After the point is selected the point monitor window will appear and display live point data. Multiple point monitor windows can be open concurrently.


Point monitor...[Left bar]
Print
Left bar
OK

Description	Value	ID #
EU Units		100
Item Description		101
High EU	100	102
Low EU	0	103
Item Timezone	0	108
Process Variable Analog	0	5000
HiHi Limit	0	307
Alarm HiHi Active	False	5004
Hi Limit	0	308
Alarm Hi Active	False	5003
Lo Limit	0	309

Event log

This button will display the event log. The event log is your friend. ☺ If something is not working as expected this is the first place to look for the reason. The HMI logs thousands of possible errors, graphics, scripting, points, connections, free disk space, bad address, invalid format, etc.



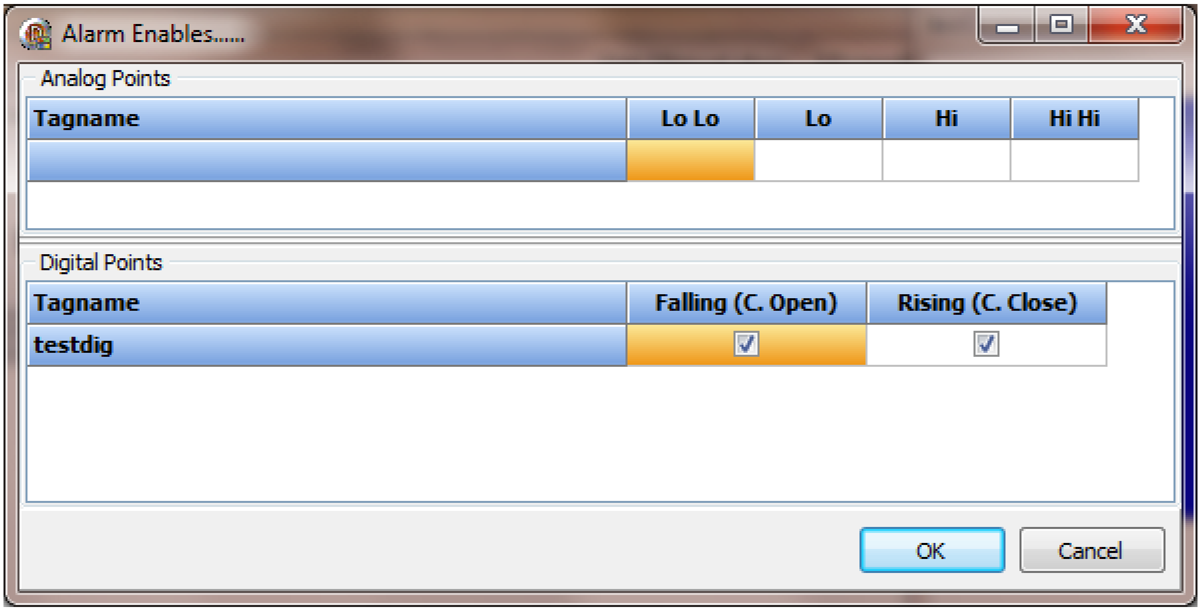
```
Time         Event
8:26:11 PM   Watchdog primary port SLC 5-05-1 failed to connect
8:26:11 PM   Watchdog primary port Plc5-1 failed to connect
8:26:11 PM   Watchdog primary port Omron-UDP-1
8:26:11 PM   Omron-UDP-1 0 : 0
8:26:11 PM   All reads are disabled for port Omron-UDP-1
8:26:11 PM   Watchdog primary port Omron-FINS-TCP-IP-1
8:26:11 PM   Omron-FINS-TCP-IP-1 0 : 0
8:26:11 PM   Watchdog port Omni-TCP1
8:26:11 PM   Omni-TCP1 0 : 0
8:26:11 PM   Watchdog Toshiba-UDP-1
8:26:11 PM   Port: ODBC-Log-1
8:26:11 PM   Inserting failed
```

Configure

This button will launch the configuration program. The most common reason to launch the configuration program from runtime is to edit a graphic screen. Changes made to graphic screens are applied when the window is opened at runtime. If the window is open, close it and re-open it to see any changes made and saved in the configuration program.

Note: All most all other changes that can be made in configuration mode will not apply to runtime mode until runtime is stopped and started.

Alarm Enables



Analog Points

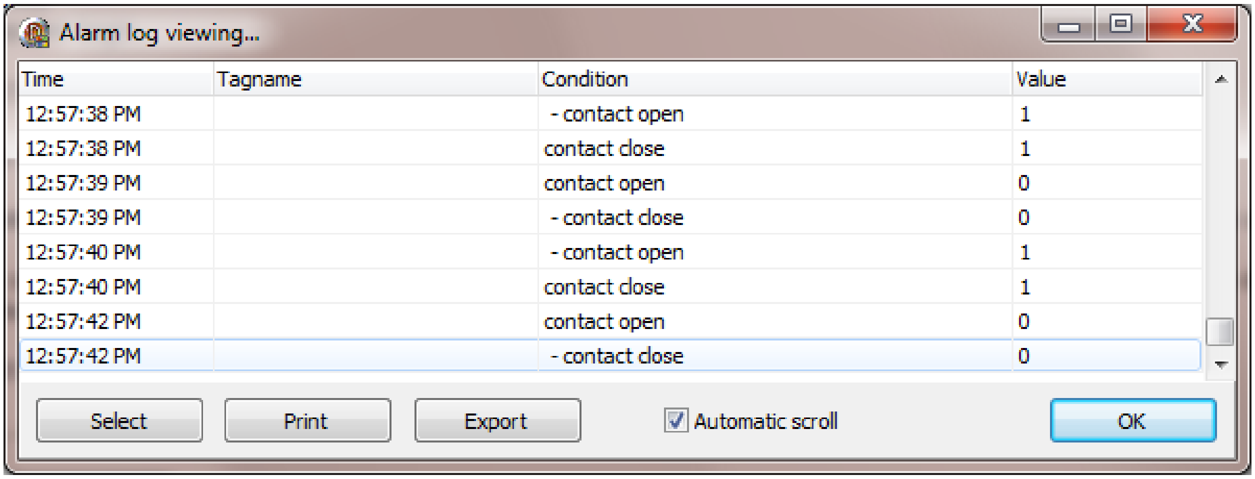
Tagname	Lo Lo	Lo	Hi	Hi Hi

Digital Points

Tagname	Falling (C. Open)	Rising (C. Close)
testdig	☑	☑

This button provides for changing the alarm enables. Alarm enables can also be changed via scripting. The required user level is set on the "Miscellaneous" panel.

Alarm Log

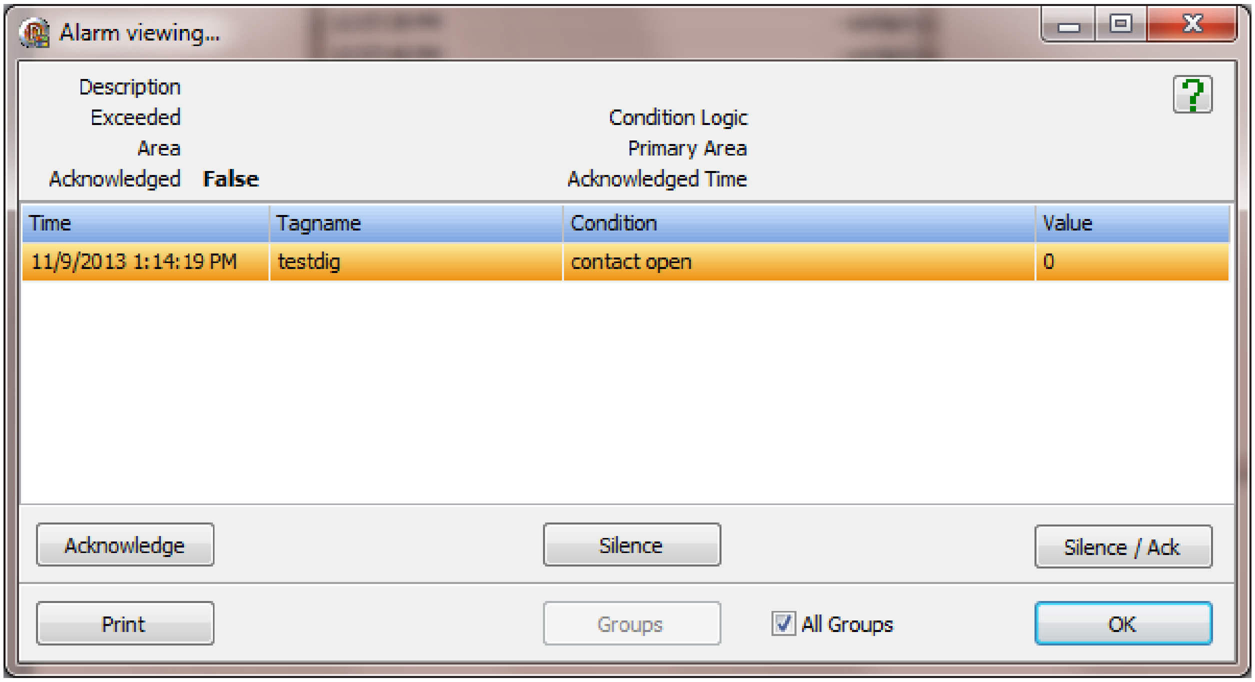


Time	Tagname	Condition	Value
12:57:38 PM		- contact open	1
12:57:38 PM		contact close	1
12:57:39 PM		contact open	0
12:57:39 PM		- contact close	0
12:57:40 PM		- contact open	1
12:57:40 PM		contact close	1
12:57:42 PM		contact open	0
12:57:42 PM		- contact close	0

☑ Automatic scroll

This button displays the alarm log. These are entries in the disk based alarm log for points that have been configured to log the alarm condition to disk. An entry is made when the alarm condition becomes true and then when the alarm condition returns to false. The "-" is the first character is the "Return to Normal" indication.

Alarms


Alarm viewing...
?
Acknowledge
Silence
Silence / Ack
Print
Groups
OK

Description
Exceeded
Area
Acknowledged **False**
Condition Logic
Primary Area
Acknowledged Time

Time	Tagname	Condition	Value
11/9/2013 1:14:19 PM	testdig	contact open	0

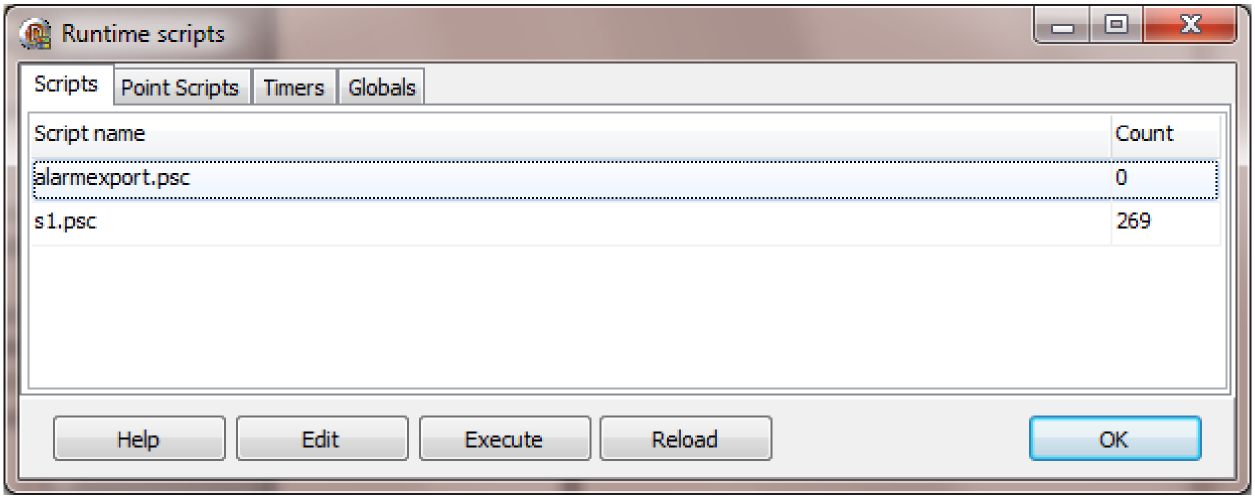
☑ All Groups

This button displays the active alarms window. These are alarms that are currently active.

Silence
Silence/Ack
Acknowledge

These buttons execute the script commands with the same name.

Scripts


Runtime scripts
Scripts
Point Scripts
Timers
Globals
Help
Edit
Execute
Reload
OK

Script name	Count
alarmexport.psc	0
s1.psc	269

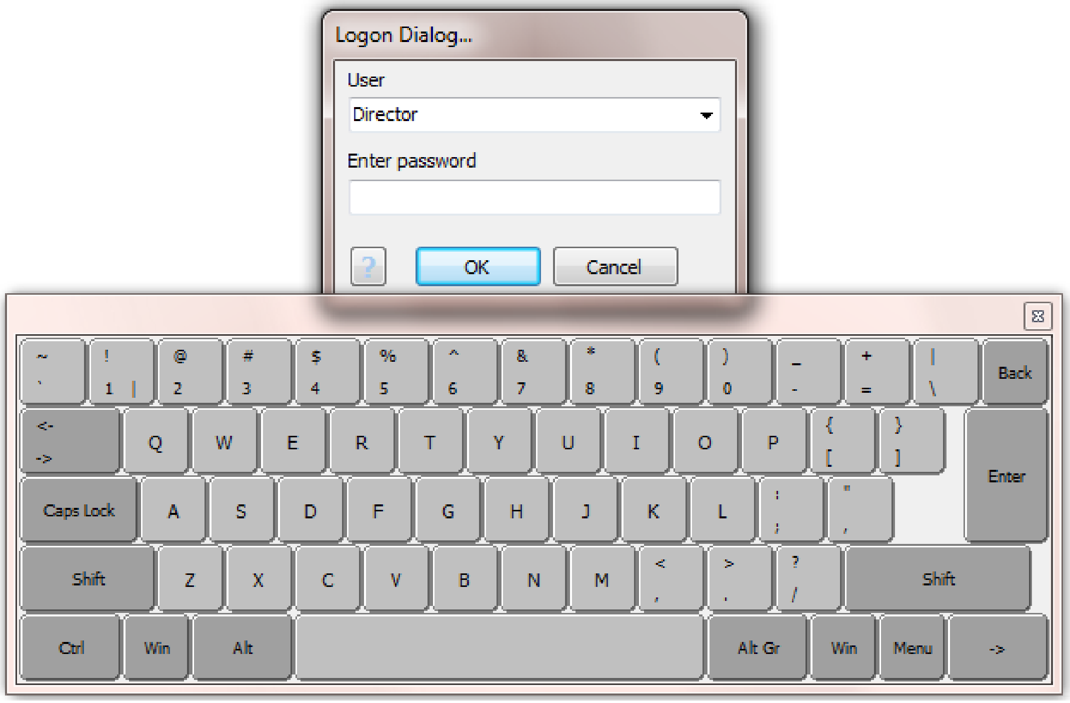
This button displays the runtime scripts window.

[Open Window]

This button executes the script “OpenWindowUserList” command.

Log On

This button displays the “Log On” window with or without the virtual keyboard.


Logon Dialog...
OK
Cancel
~ ` ! 1 @ 2 # 3 $ 4 % 5 ^ 6 & 7 * 8 (9) 0 _ - + = | \ Back
<- -> Q W E R T Y U I O P { [}] Enter
Caps Lock A S D F G H J K L : ; " '
Shift Z X C V B N M < , > . ? / Shift
Ctrl Win Alt Alt Gr Win Menu ->

User

Director

Enter password

Log Off

This button logs off the current user.

Quit

This button end runtime monitoring.

There are many other windows that can appear at runtime. For example, the windows that appear to allow for user input when a mouse or script command is called, the different “read” monitor windows, unique windows for port monitoring, etc. As always, if you have any questions or need help, contact support.

RUNTIME OVERRIDE FILE

The HMI runtime program uses the project configuration to define the monitoring operations. At times a project may be used in more than one application.

Example 1
A project to monitor a pumping station has a TCP/IP MODBUS master. The IP address is 192.168.1.1. Another pumping station has the same configuration except for the IP address. The IP address is 192.168.1.2.

Example 2
One application has three boilers. Each boiler is accessed via serial MODBUS master. Another location only has two boilers. Disabling one MODBUS master is needed.

Example 3
A project to monitor a wellhead is using a serial MODBUS master. The serial port on the installed computer uses com 2. A notebook computer sometimes used to connect only has a com 1.

A method to override some of the configuration attributes is provided in the "runtime override" feature.

When starting the HMISYS.exe program a file can be passed in a launch parameter to be used when runtime monitoring starts.

To accomplish a text file needs to be created. It uses the "ini" file format described below.

Create a shortcut to the Configure.exe. Right click on the icon and select "properties".

In the target field will be the path to the program. "C:\Program Files\ <program folder>\HMISYS.exe". Your path might be different.

Add the path to the file you created to the target. Example: "C:\Program Files\ <program folder>\HMISYS.exe" "C:\HMIOverride.ini"

Include the quotes. Use a double quote. Do not use two single quotes.

To use a different override file change the path.

Using the override feature one project configuration is used many times with changes made in the override file.

The file is made up of sections. The sections can be in any order. Only the sections needed are required. If a section is not needed it does not need to be present. Not all fields of a section need to be used. Only those fields needed must be present. To enter comments into the file place a semi-colon (;) as the first character on the line.

Format

Each section starts with [<section name>] followed by the section fields. All of the lines after the section declaration until the next section declaration or the end of file belong to the section declared above.

The fields of a section are comprised of a field name, an equal sign and the field value.

Example:

Field name	**Sign**	**Value**
primarySlaveAddress	=	1

If a value is not assigned to a field name then the field is not needed and can be removed.

Note: The filed names and section names are case sensitive. The assigned section names must be used if the section is needed. The variable field names must exactly match the names used in the project configuration.

Sections

[Port Section]

This section is used to override port configurations. Each port to have a configuration attribute overridden must have a separate section. Not all possible field names apply to all port types.

The section name is the port tagname. Example [Turbine_A] or [PUMP101].

All of the fields have a configuration item with a similar name. Refer to the help for the port type for descriptions.

These are the possible field names for a port section.

disable= 1 to disable 0 is no action

primarySlaveAddress=
secondarySlaveAddress=
primarySourceAddress=
secondarySourceAddress=
readDelayTime=
watchdogTime=
watchdogSound=
primaryHostname=
primaryIPAddress=
primaryPortNumber=
secondaryHostname=
secondaryIPAddress=
secondaryPortNumber=
primaryComPort=
primaryBaudRate=
primaryParity=
primaryDataBits=
primaryStopBits=
secondaryComPort=
secondaryBaudRate=
secondaryParity=
secondaryDataBits=
secondaryStopBits=
readDisabled1= 1 to disable 0 is no action
...
readDisabled32=
primarySourceAddress= DF1
primaryDestinationAddress= DF1
primaryChecksum= DF1 CRC or BCC
secondarySourceAddress= DF1
secondaryDestinationAddress= DF1
secondaryChecksum= DF1 CRC or BCC

[WINDOW_DISABLE]

The field names of the section are the names of the windows to be disabled.

Example:

Pump3StartStop=1 1 to disable 0 is no action

```
Level7=1
```

[PROJECT_SETTINGS]

```
loggedOnName=
soundDelayAmount=
homeScreenName=
onStartRTScript=
onDuringRTScript=
```

[POINT_INITIAL_VALUE]

This section is used to set the default item for host tags. For analog 5000, for digital 5007. For host pointer tags it is 5009. If an external tag is referenced it ONLY sets the default item to the value.

```
tagname1=56.7
tagname2=1
tagname3=48
```